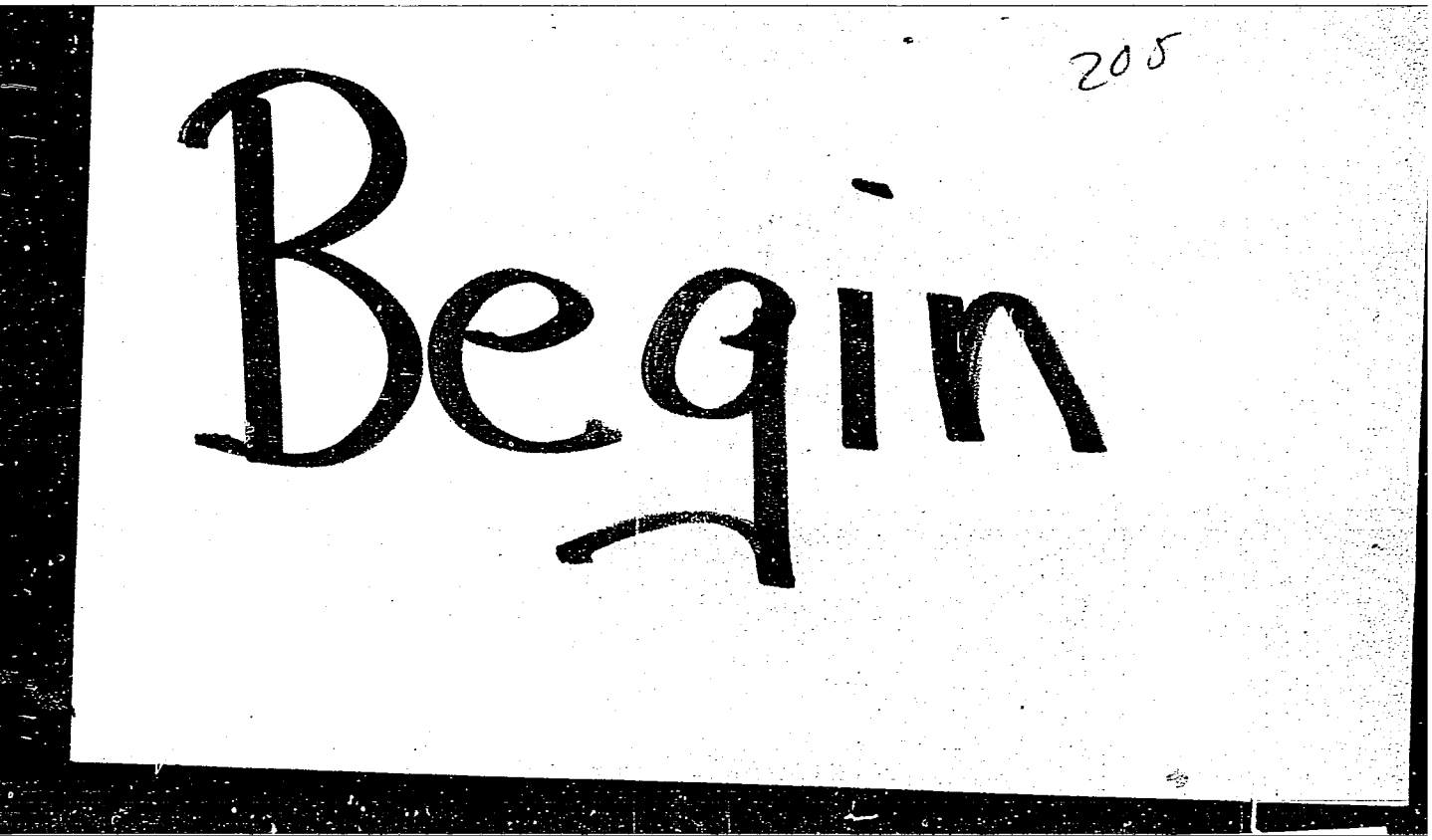

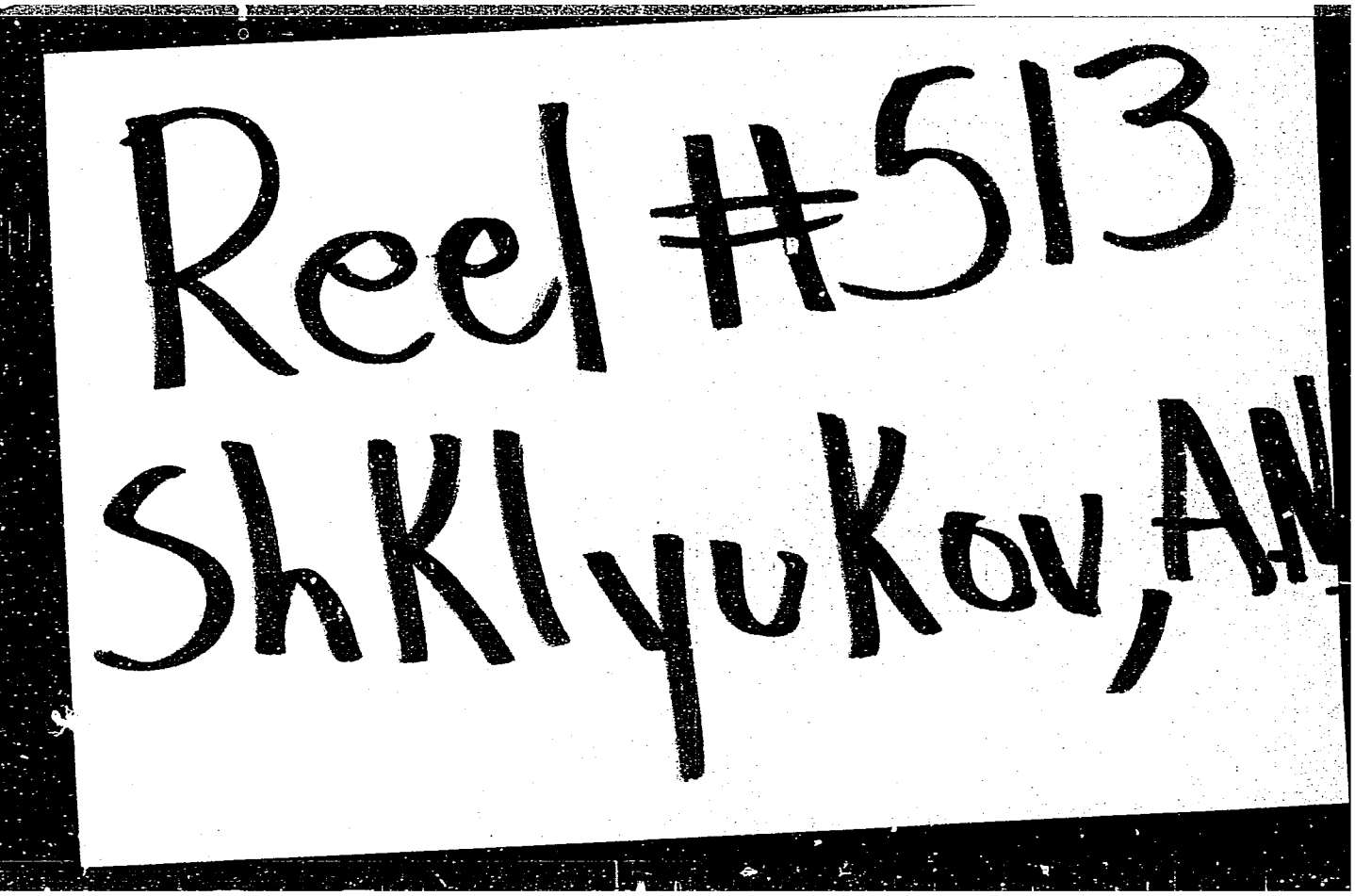

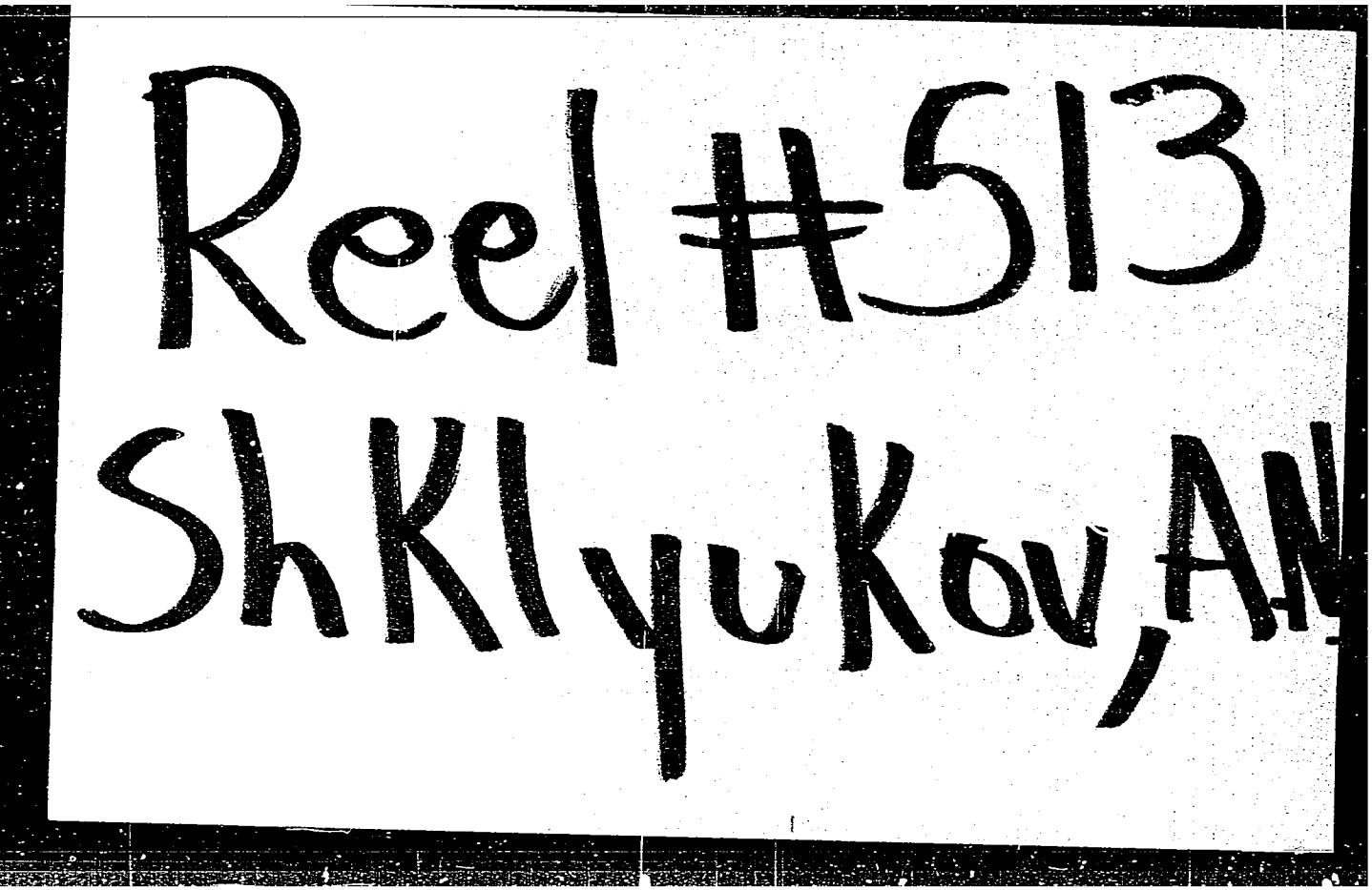

KORBE, G.D.; SHKLYUKOV, A.N.

In the laboratories of economics and production organization of Moscow City Economic Council enterprises. Biul.tekh.-ekon.inform.-Gos.nauch.-issl.inst.nauch.i tekh.inform. 16 no.4:73-74 '63.
(MIRA 16:8)

(Moscow--Economic research)

SOV/120-59-1-8/50

AUTHORS: Wang Gang-chang, Bolcv'yev, M. I., Shkobin, Yu. N.

TITLE: A 24 Litre Propane Bubble Chamber (Propanovaya puzyr'kovaya kamera ob"yemom 24 litra)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Vol 6, Nr 6, pp 41-43 and 1 plate (USSR)

ABSTRACT: This bubble chamber was built for work with the synchrophasotron of the Joint Institute for Nuclear Research. The chamber can be filled with other liquids as well as propane if the pressure is less than 30 atm and the temperature is less than 90°C. The chamber is designed for an installation with a permanent magnet having a field of 16000 oersted. Fig.1 shows the construction of the chamber. In this figure the notation is as follows: 1 glass, 2 conical cover, 3 upper window of the chamber, 4 side windows, 5 pipes, 6 needle valve, 7 duralumin discs, 8 expansion valve, 9 T-joint, 10 bellows, 11 a device for limiting the movement of the bellows and the rate of flow of the fluid, 12 collector, 13 illuminator, 14 heater, 15 window for

Card 1/2

A 24 Litre Propane Bubble Chamber

photography, 16 recesses for heating the chamber, 17 electromagnetic valve, 18 magnetic screen. The working volume is covered by a large window 3 whose dimensions are 610 x 340 x 110 mm^3 . The pressure on the working volume side is partially compensated by the pressure of the gas in the conical cover 2 (15 atm) . The working volume is illuminated at 90° to the direction in which photographs are taken. Fig.4 shows a typical photograph obtained with Co^{60} . There are 4 figures and 14 references, of which 3 are Soviet, 1 is Italian and the rest are English.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Studies)

SUBMITTED: January 2, 1958.

Shkoda

CZECHOSLOVAKIA / Virology. Viruses of Men and Animals. E-3

Abs Jour: Referat Zh.-Biol., No 6, 25 March, 1957, 21755

Author : Zhuffa, Shkoda, Kroshlak, Mikhalek, Baumgertner
Inst :
Title : The Production and Evaluation of Effectiveness of an Immunizing Serum Against Newcastle Disease in Domestic Fowl.

Orig Pub: Veterin. casop., 1956, 5, No 1, 22-30

Abstract: The avirulent strain N (Hertfordshire) was used to prepare the serum. The antigen was prepared on an allantoic-amniotic liquid of 11 day-old hen embryos. The eggs were opened 48 hours after infection. Hemo-agglutinating titer was 1:256-1:1024, and the infection titer $\sim 10^{-8}$. Hyperimmunization was conducted on Leghorn hens and turkeys. Three virus injections were carried out at intervals of 14 days. The first injection of 0.2 ml in a dilution of $2 \cdot 10^{-2}$; the 2nd, 0.5 ml in a dilution of $5 \cdot 10^{8.5}$; the 3rd, 2 ml of concentrated liquid ($20 \cdot 10^{8.5}$) (in an abbreviated hyperimmunization me-

Card : 1/2

-3-

Abs Jour: Referat Zh.-Biol., No 6, 25 March, 1957, 21755

thod, the first injection was omitted.) 14 days before the last injection, 25 ml of blood for obtaining the serum were collected from each fowl. The evaluation of effectiveness was tested on white Leghorns weighing 300-400 g (without indications of disease and parasitic invasions), which were injected with 10 million DL virus 245-5-6 and simultaneously 0.1-3.0 ml immune serum. All the fowl which received 0.1 ml of serum, died on the 4-6 day after infection; of those which received 0.25 ml, 50% died by the 8th and 10th day. Birds who received 0.5 ml of serum or more remained alive after a short illness.

Shkoda

CZECHOSLOVAKIA / Virology. Viruses of Men and Animals. E-3

Abs Jour: Referat Zh. Biol., No 6, 25 March, 1957, 21756

Author : Shkoda, Zhuffa
Inst :
Title : A Serologic Evaluation of Hyperimmune Serum Against Atypical Bird Plague by Method of Testing Different Virus Strains.

Orig Pub: Veterin. casop., 1956, 5, No 3, 229-236

Abstract: Different types of hyperimmune sera, received from the "Biovetto" institute of vaccines, and sera from Nitre were tested. The authors concluded that higher titers in RTGA and neutralizing antibodies are good criteria for serum evaluation, as a prophylactic measure. RTGA and the neutralizing reaction may take place with avirulent strains of Hertfordshire. No titer difference was detected in RTGA of separate sera as against the virulent strain 2455 and in mixtures of the tested sera to 17 dif-

LEVI, M.I.; SUCHKOV, Yu.G.; ORLOVA, G.M.; GERASYUK, L.G.; SHKOLA, A.B.; PETROSHINA, L.A.; STOGOVA, A.N.; IOFFINA, N.F.; SUKHARNIKOVA, K.A.; PAK, G.Y.; MUMINOV, K.M.; DOLSKAYA, T.N.; MASSGOV, L.G.; MEINGLAT, V.I.; MURTAZAKOVA, E.S ; STHEIMAN, A.I.; LAVRENTEV, A.F.; BAZOVA, N.N.; KULOV, G.I.; GOLKOVSKY, G.M.; SALAMATOV, M.I.; ZALYGINA, M.I.

Significance of serological methods in the epizootological study of plague in wild rodents. J. hyg. epidem. (Praha) 8 no.4:422-427 '64.

1. Institute of Scientific Research, Rostov on the Don and Central Asian Institute of Scientific Research, U.S.S.R.

LEVI, M.I.; SUCHKOV, Yu.G.; ORLOVA, G.M.; GERASYUK, L.G.; SHKODA, A.M.; PEYSAKHIS, L.A.; STOGOVA, A.N.; LOPATINA, N.F.; SUKHARNIKOVA, N.A.; PAK, G.Yu.; MUMINOV, K.M.; DONSKAYA, T.N.; NASSONOV, L.S.; VEYNBLAT, V.I.; MURTAZANOVA, E.Sh.; SHTEL'MAN, A.I.; LAVRENT'YEV, A.F.; BASOVA, N.N.; GOLKOVSKIY, G.M.; KULOV, G.I.; SAIAMOV, N.I.; ZALYGINA, N.I.

Results of the testing of the reactions of passive hemagglutination and neutralization of antibodies in the epizootologic examination of wild rodents for plague. Zhur. mikrobiol., epid. i immun. 40 no.12: 118-119 D '63. (MIRA 17:12)

1. Iz Rostovskogo i Sredne Aziatskogo protivochumnykh institutov, Chimkentskoy, Taldy-Kurganskoy, Aralomorskoy, Turkmenskoy, Astrakhanskoy i Frunzenskoy protivochumnykh stantsiy.

MISHENKO, I., prepodavatel'.;SHKODA, G., prepodavatel'.

Errors of angle readings at the "Neptune" radiolocation station.
Mor. flot 16 no.7:28-29 Jl '56. (MLRA 9:11)

1. Leningradskoye morekhodnoye uchilishche.
(Radio in navigation)

SHKODA, G.I.

Measuring the amount of precipitation in the open sea. Trudy GGO no.128:57-63 '62. (MIRA 16:2)
(Meteorology, Maritime) (Radar meteorology)

SHKODA, G.I.

Some characteristics of the construction and utilization of a meteorological radar station on a seagoing ship. Trudy GGO no.128:64-71 '62. (MIRA 16:2)
(Meteorology, Maritime) (Radar meteorology)

L 42066-66 EWT(1) IJP(c) GD/AT (N)
ACC NR: AT6020409 SOURCE CODE: UR/0000/65/000/000/0119/0129

AUTHOR: Voytsenya, V. S.; Gorbanyuk, A. G.; Onishchenko, I. N.; Safronov, B. G.; Shkoda, V. V.

89
87+1

ORG: none

TITLE: Motion of the fast plasmoids in a magnetic field of toroidal solenoid

SOURCE: AN UkrSSR. Issledovaniye plazmennykh sgustkov (Study of plasma clusters). Kiev, Naukova dumka, 1965, 119-129

TOPIC TAGS: plasmoid, solenoid, plasma magnetic field, plasma density, plasma injection, interferometer, mass spectroscope, ion distribution

ABSTRACT: The behavior of a plasmoid moving with several kev energy was studied in order to determine its upper density limit, its purity, and attainable velocity in longitudinal magnetic fields. This work is based on the theoretical predictions of N. A. Khizhnyak (ZhTF, 1965, 35, 847) who stated that due to shortcircuiting of polarization fields by electron currents rather high densities are attainable in the plasmoids. The experimental apparatus is described showing a curved region preceded by a straight section connecting with the plasma injector. The plasmoid properties were studied with a mass spectrograph, time-of-flight mass analyzer, microwave interferometer and electric and thermocouple probes. In the experiments with low density plasma, the ion dis-

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L 41066-66

ACC NR: AT6020409

tribution was found to be considerably distorted. At 10^{12} cm^{-3} density, long high energy tails appear. In higher density experiments, the mean ion energy was found to be 3 to 5 kev, with an impurity content of 40%. A study of the solenoidal guiding field indicates that plasma densities higher than 10^{13} ions/cm^3 are possible if fields are increased above the 8 koe fields available to the authors. Orig. art. has: 10 figures.

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 007/ OTH REF: 002

Card 2/2

SHKODA, I.A.

Every telecommunication worker should approach work as a true communist. Vest. sviazi 23 no.7:5-6 Jl '63. (MIRA 17:2)

1. Nachal'nik Grebenkovskogo uzla svyazi Poltavskoy oblasti.

Shkoda, M.A.

M.F. BOGATYREV, M.A. SHKODA, A.P. MISCHENKO

The Problem of an Early Diagnosis of Obliterating Endarteritis
VOYENNO-MEDITSINSKIY ZHURNAL (Military Medical Journal), no. 2, February 1955, p. 34

BOGATYREV, M.F., gvardii polkovnik med.sluzhby; SHKODA, M.A., mayor med.sluzhby; MISHCHENKO, A.P., kapitan med.sluzhby

Diagnosis and expert evaluation in obliterating endarteritis. Voen.-med.zhur. no.10:30-34 O '58. (MIRA 12:12)

(ARTERIOSCLEROSIS OBLITERANS
diag. & expert testimony in soldires (Rus))
(EXPERT TESTIMONY
on arteriosclerosis obliterans in soldiers (Rus))
(ARMED FORCES PERSONNEL, dis.
arteriosclerosis obliterans, diag. (Rus))

SHKODA, P. (Omsk)

Technical library at an educational center. Prof.-tekh. obr. 22 no.6:30 Je '65. (MIRA 18:7)

L 19022-65 EWT(l)/EWG(k)/EPA(sp)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(m)-2
Pi-4/Po-4/Pz-6/Pab-10 IJP(c)/RAEM(a)/AFTC(p)/ASD(f)-2/SSD/SSD(b)/AEDC(b)/AFWL/
ACCESSION NR: AP4049054 ASD(a)-5/AFETR/ESD(gs) AT S/0057/64/034/011/2083/2085

AUTHOR: Voytsenya, V. S.; Gorbanyuk, A. G.; Onishchenko, I. N.; Safronov, B. G.; Shkoda, V. V.

TITLE: Concerning the polarization of a plasma burst in a uniform axially symmetric magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.11, 1964, 2083-2085

TOPIC TAGS: plasma, plasma polarization, plasma electric field, magnetic field plasma effect, plasma gun

ABSTRACT: The authors have measured the radial electric field in plasma bursts moving axially in a 6 cm diameter glass drift tube in a uniform longitudinal magnetic field. The investigated range of plasma velocities and magnetic field strengths is not given, but it included a velocity of 1.2×10^7 cm/sec and a field strength of 700 Oe. After leaving the conical plasma gun in which it was produced, the plasma burst passed successively through a grounded metal screen and three 2 cm diameter collimating openings at 5 cm intervals before entering the magnetic field. The electric field in the plasma was measured with two radially adjustable probes located 50 cm from the plasma gun. Radial electric fields with strengths up

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549710001-3"

L 19022-65
ACCESSION NR: AP4049054

to 10 V/cm were observed; these fields were directed toward the axis. The electric field strength was not strongly dependent on the magnetic field strength, but the half-width of the potential curve decreased with increasing magnetic field. The effect of sharpening the transition from the field-free region to the uniform field by the use of iron was investigated in order to determine whether the electric polarization of the plasma might be due to processes occurring in the non-uniform field. Altering the magnetic field in the non-uniform region had very little effect on the electric field, and it is concluded that the electric field was due to the difference between the ion and electron Larmor radii in the uniform magnetic field, to an uncompensated negative space charge, or to a rotation of the plasma. A decision between these three probabilities cannot be reached on the basis of the present experiments. "The authors express their gratitude to K.D.Sinel'nikov for his support of the present work and for valuable discussions." Orig.art.has: 3 figures.

ASSOCIATION: none

SUBMITTED: 20Feb64 ENCL: 00

SUB CODE: ME, EM NR REF SOV: 003 OTHER: 004

2/2

L 60325-65 EWT(1)/EPF(n)-2/EWG(m)/EPA(w)-2 Pz-6/Po-4/Pi-4 IJP(c) AT

ACCESSION NR: AP5018319 UR/0057/65/035/007/1330/1332
533

AUTHOR: Voytsenya, V. S.; Gorbanyuk, A. G.; Onishchenko, I. N.; Shkoda, V. V.; Safronov, B. G.

49
47
B

TITLE: On the polarization of a plasma moving in a curved magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 7, 1965, 1330-1332

TOPIC TAGS: plasma, plasmoid, plasma polarization, nonhomogeneous magnetic field

ABSTRACT: The authors have previously measured with probes the electric fields in plasma (from a conical plasma gun) which were moving in a uniform magnetic field (ZhTF, 34, 847, 1964) and shown that there is present a "radial" electric field directed toward the axis of the plasma. In the present paper they report similar measurements on plasmas moving in a toroidal magnetic field. In both groups of experiments the plasmas were produced by a conical plasma gun, passed through 2 cm diameter openings in two grounded plane electrodes, and drifted in a 6 cm diameter glass tube. In the present group of experiments the drift tube was bent into a 50 cm radius circle, thus forming a torus. Electric potentials were measured along the two principal diameters of the drift tube, i.e., parallel to the axis and to the large radius of the torus, respectively. When the radial

Card 1/2

L 60325-65

ACCESSION NR: AP5018319

2

field that was previously found to arise in a plasma moving in a uniform magnetic field was subtracted, the residual electric field was found to be in qualitative agreement with the polarization field expected theoretically in a plasma moving in a curved magnetic field. In a 600 Oe magnetic field the residual polarization field was 8 V/cm in the direction of the torus axis and 6 V/cm in the direction of the large radius. This latter value is several times larger than that calculated by N.A.Khizhnyak (ZhTF, 35, 847, 1965). This discrepancy can be due either to a less efficient short circuiting of the polarization field than was assumed in the theoretical derivation, or to the presence in the experimental plasmas of significant quantities of heavy ions. "In conclusion, the authors thank K.D. Sinel'nikov and N.A.Khizhnyak for valuable discussions." Orig. art. has: 1 formula and 3 figures.

ASSOCIATION: none

SUBMITTED: 21Sep64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 006 OTHER: 000

Card 2/2 NDP

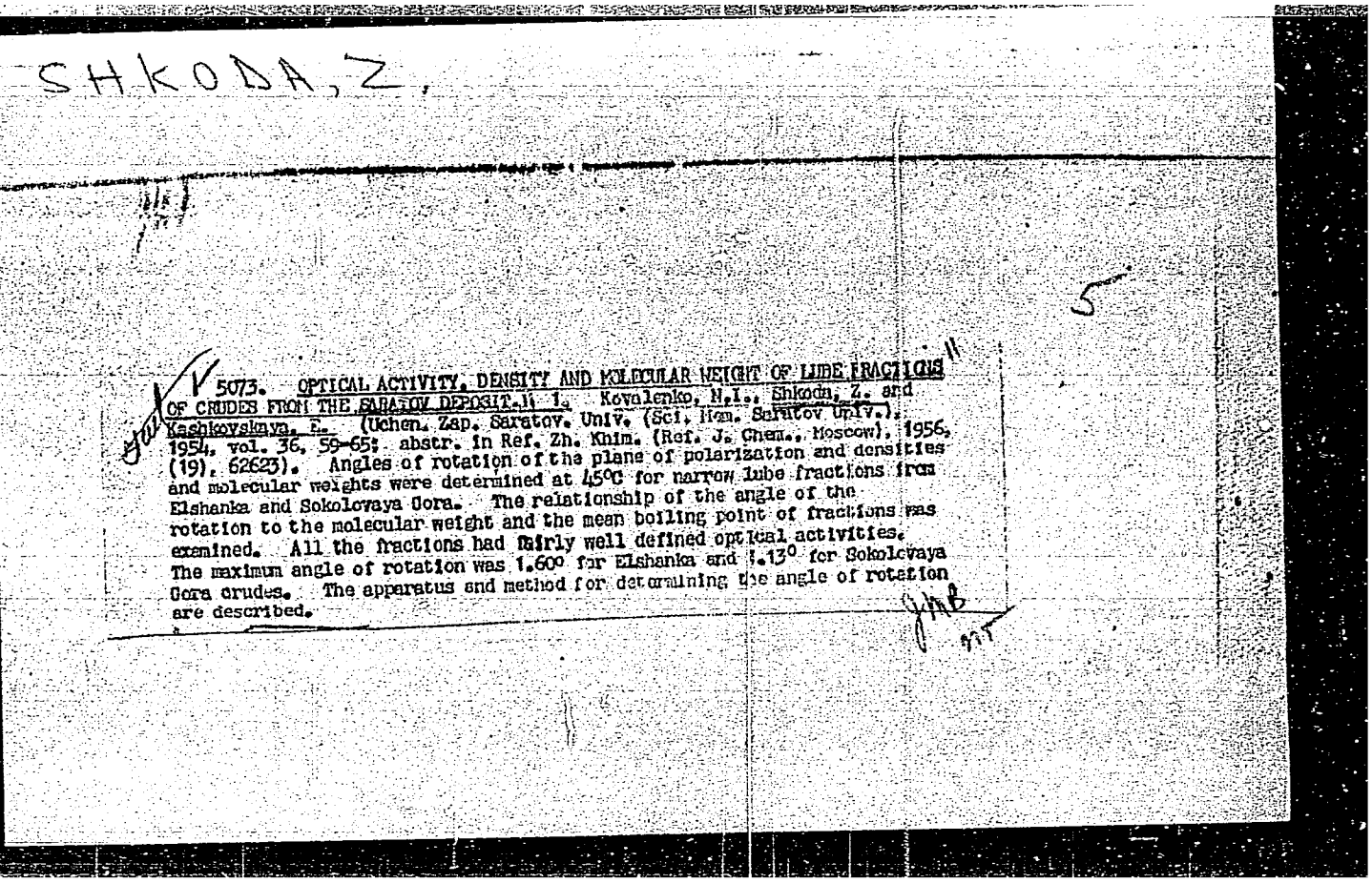
SHKODA, Ye.

Self-balancing transverse beam. Mashinostroitel' no.6:11 Je '64.
(MIRA 17:8)

FRISHMAN, M.A., doktor tekhn.nauk; SHATERKOV, V.I., kand.tekhn.nauk;
SHKODA, Ye.G., inzh.; LIPOVSKIY, R.S., kand.tekhn.nauk

Eliminating the causes of crack formation in switch rails with squeezed out heels. Vest. TSNII MPS 20 no.5:50-52 '62.
(MIRA 15:8)

1. Dnepropetrovskiy institut inzhenerov zheleznodorozhnogo transporta.
(Railroads--Rails--Defects)



SHKODA, Z.

5073. OPTICAL ACTIVITY, DENSITY AND MOLECULAR WEIGHT OF LUBE FRACTIONS OF CRUDES FROM THE SARATOV DEPOSIT. II. I. Kovalenko, N.I., Shkoda, Z. and Kashkovskaya, E. (Uchen. Zap. Saratov. Univ. (Sci. Mem. Saratov Univ.), 1954, vol. 36, 59-65; abstr. in Ref. Zh. Khim. (Ref. J. Chem., Moscow), 1956, (19), 62623). Angles of rotation of the plane of polarization and densities and molecular weights were determined at 45°C for narrow lube fractions from Elshanka and Sokolovaya Gora. The relationship of the angle of the rotation to the molecular weight and the mean boiling point of fractions was examined. All the fractions had fairly well defined optical activities. The maximum angle of rotation was 1.60° for Elshanka and 1.13° for Sokolovaya Gora crudes. The apparatus and method for determining the angle of rotation are described.

SHKODA-UL'YANOV, V., kand.fiz.-matem.nauk; MAZYUKEVICH, M. [Maziukevych, M.], nauchnyy sotrudnik

Gamma rays. Nauka i zhyttia 12 no.10:36-38 O '62. (MIRA 16:1)

1. Uzhgorodskiy universitet (for Mazyukevich).
(Gamma rays)

SHKODA, Z.

USSR/ Electronics - Radio receivers

Card 1/1 Pub. 89 - 12/28

Authors : Shkoda, Z.

Title : Czechoslovakian radio receivers

Periodical : Radio 4, 22-23, Apr 1955

Abstract : The basic principles and special characteristics of Czechoslovakian radio receivers, radio loudspeakers, and a television set, are discussed. The general description covers the following items: type 4002A television set; a loudspeaker for radio receiving and broadcasting units; a six tube "Tesla" 510A radio receiver; a six tube "May 620A" superheterodyne receiver a ten-tube "Tabor Tesla 512070" superheterodyne radio-phonograph combination set; and a "Lambda V" receiving-transmitting unit which can be used for radio-telephone communications and for telegraph ABC-code transmission. Illustrations.

Institution : .....

Submitted : .....

FD-2214

USSR/Nuclear Physics - Photoneutron yield

Card 1/2 Pub. 146-19/25

Author : Gol'danskiy, V. I., and Shkoda-Ul'yanov, V. A.

Title : Maximum yield of photoneutrons and a new method for the determination of the integral cross-sections of gamma-neutron reactions for high-energy photons

Periodical : Zhur. eksp. i teor. fiz. 28, 623-626, May 1955

Abstract : In photoneutron investigations the source of photoneutrons is usually thin specimens in which electron-photon multiplication of the original gamma quanta is absent. In the present work the aim of the authors is to determine the yield of photoneutrons under conditions of completely developed electronphoton cascade; that is, a different aim, namely to determine the maximum coefficient of transformation of photons into neutrons. They claim that these measurements permit one to determine the integral cross-sections of reactions in the formation of photoneutrons (S.Z. Belen'kiy, Lavinnyye protsessy v kosmicheskikh luchaka [Shower processes in cosmic rays], State Tech Press, 1948). They conclude that the determination of the maximum yield of photoneutrons in the development of a shower from

high-energy photons is of interest in the possible transformation of the electron-photon component of cosmic rays into nucleons. Four references e.g. A. B. Migdal, ibid. 15, 1945

Institution : Physics Institute im. P. N. Lebedev, Acad Sci. USSR; Institute of Chemical Physics, Acad. Sci. USSR

Submitted : January 25, 1955

45579
S/881/57/000/001/005/013
A066/A126

84,6502

AUTHOR: Shkoda-Ul'yanov, V. A.

TITLE: The "photon difference" method for infinitely thick specimens

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 55 - 59

TEXT: This is a review of papers published between 1946 and 1956 on the determination of the photoneutron yield. In particular, the author considers the influence exerted by the thickness of the specimen and by the photon energy on the (γ, n)-reaction cross section. Conclusions: (1) The neutron background interfering with the determination of the cross section by directly recording the photoneutrons can be largely reduced by means of specimens with a thickness of 15 to 20 radiation lengths. The necessary calculation must presuppose an infinitely thick lump, which is not more difficult than assuming one of infinite thinness. (2) The fact that the photoneutron yield pertains to one and the same dose of incident

Card 1/2

The "photon difference" method for .....

photons makes it possible to overcome some of the drawbacks of the photon difference method when applied to thick specimens. The avalanche theory allows γn-reaction cross sections to be computed with greater accuracy in the case of thick specimens. (3) Work with thick specimens is particularly interesting within the high-energy region wherein the photonuclear reaction cross sections are small. (4) In those energy regions in which the γn-reaction cross sections are equal to zero the photoneutron yield is only due to photon multiplication. An increase in the photoneutron yield as a function of energy corresponds to an increase in the equilibrium spectrum of the photons so that the equilibrium spectrum can easily be calculated by measuring the yield. (5) The use of an equilibrium spectrum in work with electron beams appears to be particularly helpful for determining the γn-reaction cross section.

SUBMITTED: October 15, 1956

Card 2/2

45580
S/881/57/000/001/006/013
A066/A126

94 L5(0

AUTHORS: Shkoda-Ul'yanov, V. A., Lend'yel, V. I., Krivskiy, I. Yu.

TITLE: Determination of the total cross sections of γn-reactions for medium and light elements with the aid of the avalanche theory

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 60 - 72

TEXT: It has been shown earlier (V. I. Gol'danskiy and V. A. Shkoda--Ul'yanov. ZhETF, 28, 623 (1935)) that the total cross sections of γn-reactions for heavy elements can be calculated precisely enough by using the equilibrium spectrum obtained with the help of the avalanche theory, i.e., the photon spectrum integrated over the entire length of the spectrum. This method is now applied to light and medium nuclei, and the resulting spectrum is used to calculate the total γn-reaction cross section for iron which is in good agreement with experimental

Card 1/2

Determination of the total cross .....

data of several authors. Thus, σ_{tot} = 0.50 Mev · b, the experimental value being 0.43 Mev · b (cf. L. I. Katz and R. G. Baker. Phys. Rev., 82, 271 (1951); L. I. Katz and A. G. Cameron. Cn. Journ. Phys., 29, 518 (1951)). For elements heavier than iron it is shown that σ_{tot} can be determined from the photoneutron yield of a lump 10 cm thick. There are 4 tables and 2 figures.

SUBMITTED: October 15, 1956

Card 2/2

S/881/57/000/001/007/013
A066/A126

24,6500

AUTHORS: Kuruts, I.Yu., Tarabiy, M.I., Shkoda-Ul'yanov, V.A.

TITLE: The influence exerted by the width of the resonance range on the total cross sections of γn-reactions determined by the method of thick specimens

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 73 - 78

TEXT: The procedure suggested previously (V.A. Shkoda-Ul'yanov. Nauchnyye zapiski Uzhgorodskogo Gosudarstvennogo universiteta, v. 18, 1956; B.I. Gol'danskiy and V.A. Shkoda-Ul'yanov. ZhETF, 623, 1955) for determining the total cross sections of γn-reactions in thick specimens by the photon difference method is based on the assumption that the resonance range characterizing the excitation function of the γn-reaction is narrow enough so that for $E = E_p$ the factor

$$\frac{1}{\sigma_{abs}(E)\,E}\left[1 = \frac{Y(\epsilon)}{f(0)}\right]$$

Card 1/2

The influence exerted by the width of ....

is equal to the value at which $\sigma_{\gamma n}$ (E) reaches a maximum, and remains constant in the determination of the maximum photoneutron yield. This assumption, which is based on equations of the above papers, is proved to be justified. Photoneutron yields are calculated for Al, Cu, Pb, and for a maximum bremsstrahlung energy of 250 Mev. The results obtained here prove the applicability of the method proposed by the two above-mentioned authors. There are 3 tables.

SUBMITTED: October 18, 1956

Card 2/2

S/881/57/000/001/008/013
A066/A126

AUTHORS: Gomonay, V. I., Parlag, A. M., Sikora, D. I., Shkoda-Ul'yanov, V. A.

TITLE: The use of the "equilibrium spectrum" of photons for calculating (γn)-reaction cross sections from neutron yield curves for heavy elements by the "photon difference" method

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 79 - 85

TEXT: A comparison between the results of previous papers (V. A. Shkoda-Ul'yanov. O novom metode opredeleniya secheniy reaktsiy - A new method of determining reaction cross sections. Nauchnyye zapiski Uzhgorodskogo Gosudarstvennogo universiteta, v. 18, 1956; V. I. Gol'danskiy and V. A. Shkoda-Ul'yanov. ZhETF, 28, 629 (1955)) and data published by L. Katz and A. G. Cameron (W. j. Phys., 29, 518 (1951) shows that the photon difference method is a suitable means for calculating

Card 1/2

The use of the "equilibrium spectrum" .....

(γ,n)-reaction cross sections from the excitation curves obtained for thick specimens. It is noted that a tabular form of the function $I(\varepsilon,\varepsilon_0)$ is particularly convenient for the purpose. A table of this function for photon energies ranging from 8.25 to 27.75 Mev is presented in an appendix. There is 1 table.

45581
S/881/57/000/001/010/013
A066/A126

94650

AUTHOR: Shkoda-Ul'yanov, V.A.

TITLE: The use of the equilibrium spectrum of photons for determining the excitation function of neutron production by means of high-energy electrons

SOURCE: Uzhgorod. Universitet. Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits; sbornik statey, no. 1, 1957, 89 - 101

TEXT: A new method is given for determining the absolute values of γn--reaction cross sections on the basis of the avalanche theory. Using a monochromatic electron beam and specimens with a thickness of several radiation lengths, the photoneutron production cross section

$$\sigma_{in}(E_0) = \sigma_p(E_0) E_0 \beta \left\{ \frac{d^2Q(E_0)}{dE_0^2} + \frac{2,29}{3} \int_{E_1}^{E_0} \frac{E}{E_0} \frac{d^2Q(E_0)}{dE_0^2} dE \right\} \quad (3a)$$

is obtained from the integral equation

Card 1/2

The use of the equilibrium spectrum of ....

$$Q(E_0)=\int_{E_1}^{E_0}\sigma_{\gamma n}(E)\,\Gamma_p(E_0, E)\,dE, \qquad (2)$$

by twofold differentiation with respect to E_0. Here, $\sigma_{\gamma n}(E)$ is the photoneutron production cross section, $\sigma_p(E)$ the pair production cross section, E_0 the energy of the incident particle, β the critical energy, and $Q(E)$ the experimental photoneutron yield. Equation (2) defines the relation between the photoneutron yield and the neutron production excitation function. Thus, $\sigma_{\gamma n}(E)$ can be determined from the measured value of the photoneutron yield if the pair production cross section is known. Between 30 and 80 Mev the new method makes it possible to reduce the error involved in the determination of the neutron production excitation function to a large extent. The method can also be applied to medium and heavy nuclei. There are 3 figures and 3 tables.

SUBMITTED: October 18, 1956

Card 2/2

21(7) SOV/56-35-4-37/52

AUTHOR: Shkoda-Ul'yanov, V. A.

TITLE: On the Possibility of Using the Equilibrium Spectrum of Belen'kiy-Tamm for the Determination of the Functions of the Excitation of γn-Reactions (O vozmozhnosti ispol'zovaniya ravnovesnogo spektra Belen'kogo-Tamma dlya opredeleniya funktsiy vozbuzhdeniya γn-reaktsiy)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 4, pp 1041-1042 (USSR)

ABSTRACT: Measurements of photonuclear reaction cross sections in the energy interval of from 25 to 80 - 10 MeV carried out with hitherto known methods present some difficulties. These difficulties are in most cases due to the small cross sections of γn-reactions and to the comparatively strong influence exercised by the neutron background in such experiments. Additional difficulties occur in connection with the necessity of having to take the dependence of the sensitivity of the monitor chamber upon photon energy into account. Contrary to what was the case with previous papers, in which the functions of γn-reaction excitation were determined on thin samples,

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SOV/56-35-4-37/52

On the Possibility of Using the Equilibrium Spectrum of Belen'kiy-Tamm for the Determination of the Functions of the Excitation of γn-Reactions

the author suggests a new method of determining the cross sections of photonuclear reactions. The idea underlying this method is based upon the application of the equilibrium spectrum of photons, which is produced by bombarding a thick target with a primary monochromatic electron beam. This method warrants a practically complete development of the electron-photon shower. The number of photoneutrons produced in this case can be brought into connection with the equilibrium spectrum of the photons by means of an integral equation for $\sigma_{\gamma n}$. A solution ansatz for this integral equation is written down and explained. The author hopes that by means of the here suggested method it will in future be possible to avoid the hitherto unavoidable grave errors. In conclusion, the author thanks V. I. Gol'danskiy and L. Ye. Lazareva for discussing several problems. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Uzhgorodskiy gosudarstvennyy universitet (Uzhgorod State University)

Card 2/3

23330 S/058/61/000/006/014/063
A001/A101

24.6600 (1057, 1482)

AUTHORS: Grizhko, V.M., Sikora, D.I., Snkoda-Ul'yanov, V.A., Abramenkov, A.D., Parlag, A.M., Shramenko, B.I., Pisun, A.N.

TITLE: An attempt to determine cross sections of γn-reactions in lead by using a very thick target and a monoenergetic electron beam

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1961, 96, abstract 6B392 ("Dokl. i soobshch. Uzhgorodsk. un-t., Ser. fiz.-matem. n", 1960, no.3, 1-4)

TEXT: The authors discuss preliminary results of calculations of the cross section of reaction (γ, n) in Pb from the data, obtained by them earlier, on the yield of photoneutrons from a very thick lead target using a monoenergetic electron beam (RZhFiz, 1961, 1B471). The authors are of the opinion that the accuracy or reproducibility of $\sigma(\gamma, n)$ in the region > 15 Mev is by no means worse than in the region of lower energies. They point out that the method of "difference of photons", which was applied formerly for calculations of the cross section, yields the accuracy by 20 - 30% poorer in the region of energies beyond the giant resonance, this can lead to the smoothing out of a possible secondary maximum. The

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23330 S/058/61/000/006/014/063
A001/A101

An attempt to determine cross sections ...

authors conclude that the developed method of determining cross sections is especially effective for detecting secondary maxima in the region of γ-quants energies higher than .5 Mev. The problem of absolute accuracy of the method remains open in the article.

A. Moiseyev

[Abstracter's note: Complete translation]

Card 2/2

S/058/61/000/007/008/085
A001/A101

24.6731

AUTHORS: Grizhko, V.M., Sikora, D.I., Shkoda-Ul'yanov, V.A.

TITLE: Precision monitor of electron beams

PERIODICAL: Referativnyy zhurnal. Fizika, no. 7, 1961, 43, abstract 7B84 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. fiz.-matem.n", 1960, no. 3, 5-7)

TEXT: The authors describe a monitor of electron beams which represents an improved Faraday cylinder connected with an integrating circuit (d-c amplifier with 100% negative feedback). A detailed description of the monitor design and the block-diagram of the integrator are presented. The test of the monitor on a 30-Mev linear accelerator has shown that the precision of monitoring the electron beam amounts to 0.7%, and the errors arising due to ionization currents do not exceed 0.05%.

L. Landsberg

[Abstracter's note: Complete translation]

Card 1/1

GOMANAY, V.I.; KRIBSKIY, I.Yu.; RYZHKINA, N.V.; SHKODA-UL'YANOV, V.A.
PARLAG, A.M.

Delineation of oil-bearingand water-bearing strata by means of electron and photon beams. Atom.energ. 9 no.4:313-315 O '60. (MIRA 13:9)

(Carbon--Isotopes)
(Oxygen--Isotopes)
(Petroleum)

83569
S/056/60/038/005/002/050
B006/B070

26.2244
26.2240

AUTHORS: Grizhko, V. M., Sikora, D. I., Shkoda-Ul'yanov, V. A., Abramenkov, A. D., Shramenko, B. I., Fisun, A. N.

TITLE: Determination of the Yield of Photoneutrons From Lead Under the Action of Electrons Having Energies From 10.5 to 20.5 Mev (Method of Thick Absorber)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 5, pp. 1370-1373

TEXT: In an earlier publication (Ref. 1), some of the authors have calculated the photoneutron yield for some elements with the help of the Belen'kiy-Tamm equilibrium spectrum. Now the authors have experimentally studied the yield of photoneutrons from a lead block that is practically of infinite thickness and absorbs the monochromatic electron beam completely, and compared the results with those of the theory. The present paper describes this work. The experimental method is essentially that suggested by V. I. Goldanskiy and V. A. Shkoda-Ul'yanov. The experimental arrangement is schematically shown in Fig. 1; the beam catcher can be used simultaneously as a monitor of the electron beam and as the source of

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83569
S/056/60/038/005/002/050
B006/B070

Determination of the Yield of Photoneutrons From Lead Under the Action of Electrons Having Energies From 10.5 to 20.5 Mev (Method of Thick Absorber)

photoneutrons. The linear accelerator of the Institute (E_{max} = 30 Mev, 50 cps, current pulse duration 1 μsec) was used as the source of electrons. The energy resolution of the apparatus was 0.4%. The neutron yield was measured by a boron counter (Ref. 7) working in the range of direct proportionality between the number of neutrons and the current striking the target. The measurements were made with a current of the order of 10^{-10} a. The counter was calibrated with a standard source of Ra+Be. Fig. 2 shows the measured dependence of the photoneutron yield from the thick lead block on the energy of the electrons between 10.5 and 20.5 Mev (Curve 2). It also shows (Curves 1 and 3) the photoneutron yield calculated from the Belen'kiy-Tamm equilibrium spectrum and the photoneutron excitation functions of Refs. 9 and 10. Every experimental point is the resultant of 5 - 7 measurements. The statistical error in the counting of pulses does not exceed 2%. The background intensity below the threshold of the (γ,n) reaction on carbon is 0.5%, and above this it is $\geq 3\%$. In the latter case, the neutrons are produced predominantly in the graphite collimator.

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83569

Determination of the Yield of Photoneutrons From Lead Under the Action of Electrons Having Energies From 10.5 to 20.5 Mev (Method of Thick Absorber)

S/056/60/038/005/002/050
B006/B070

The monochromator was calibrated for absolute energy from the (γ,n) reaction threshold for oxygen and carbon according to an activation method. The experimental results agree better with those of Ref. 10 than with those of Ref. 9. An estimate of the integral photoneutron production cross section yielded the value 2.6 b. Mev. For this estimate, it was assumed that the cross section reaches its maximum value for 13.8 Mev. The authors thank A. S. Litvinenko, A. I. Charkin, V. A. Skubko, V. L. Auslender, V. I. Gomonay, and A. M. Parlag for their assistance in the work; A. K. Val'ter and I. A. Grishayev for their interest and discussions; and L. Ye. Lazarev and V. I. Gol'danskiy for their advice. There are 2 figures and 10 references: 4 Soviet and 6 US.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Institute of Physics and Technology of the Academy of Sciences Ukrainskaya SSR). Uzhgorodskiy gosudarstvennyy universitet (Uzhgorod State University)

SUBMITTED: August 18, 1959(initially) and December 19, 1959(after revision)

Card 3/3

S/058/62/000/009/006/069
A006/A101

AUTHOR: Shkoda-Ul'yanov, V. A.

TITLE: On the possibility of using nuclear magnetic resonance to investigate the fine structure of photonuclear reactions

PERIODICAL: Referativnyy zhurnal, Fizika, no. 9, 1962, 55, abstract 9B424 ("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. Fiz.-matem. n.", 1961, no. 4, 7 - 8)

TEXT: The author discusses methods of investigating photonuclear reactions in γ-quanta absorption by means of nuclear resonance. The author assumes that the excited nucleus undergoes changes of the magnetic properties including the gyromagnetic ratio; this is recorded by the nuclear resonance from changes in the precession angle of the nuclear spin around the orientation of the magnetic field. An evaluation of changes in this angle yields for a pulse field of about 300,000 oersted at $t \sim 10^{-10}$ sec and $g \sim 1$ an angle of the order of 10°.

V. Stepanov

[Abstracter's note: Complete translation]

Card 1/1

L 12840-65 EWT(m)/EWA(h) SSD/AFWL/AFETR/ASD(a)-5/RAEM(a)/ESD(gs)/ESD(t)
ACCESSION NR: AT4046100 S/3114/61/000/004/0003/0006

AUTHOR: Mazyukevich, N. P.; Parlag, A. M.; Shkoda-Ul'yanov, V. A.

TITLE: The possibility of using photonuclear reactions to distinguish an oil-water contact

SOURCE: Uzhgorod. Universitet. Doklady* i soobshcheniya. Seriya fiziko-matematicheskikh nauk, no. 4, 1961, 3-6

TOPIC TAGS: oil water interface, photon beam, lectron beam, deuterium, photonuclear reaction, prospecting, petroleum detection

ABSTRACT: In previous papers, the use of electron beams in oil prospecting was evaluated on the basis of the theoretical emission of photoneutrons from infinite blocks of water and oil under the influence of a stream of electrons. For lower energy regions, the emission of photoneutrons due to the deuterium in the water and oil and the C^{13} in the oil was calculated. In the present paper, since electron beams are now seldom used, the authors calculate photoneutron emission from the water and oil under the influence of a beam of photons, applying the Belen'kiy-Tamm theory for the energy range 2.25-15 Mev. It was found that the emission of photoneutrons from the oil and water differs only negligibly in the region 2.25-5 Mev. However, if the higher deuterium content in the hydrogen of the oil in comparison

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L 12840-65
ACCESSION NR: AT4046100

3

with the water is taken into account, then the difference in emissions becomes sufficiently large to distinguish between the oil and the water. Since the difference is still small, and since the threshold for the formation of photoneutrons from C^{13} is $\sim$ 5 Mev, the most convenient range of photon energies for petroleum prospecting seems to be 7 Mev. "The authors thank M. K. Magdinets and I. D. Orlova for their help in carrying out the numerical calculations." Orig. art. has: 1 figure, 1 table, and 1 formula.

ASSOCIATION: Uzhgorodskiy gosuniversitet (Uzhgorod State University)

SUBMITTED: 00 ENCL: 00 SUB CODE: ES, NP

NO REF SOV: 005 OTHER: 002

Card 2/2

S/089/61/010/003/012/021
B102/B205

AUTHORS: Gomonay, V. I., Sikora, D. I., Shkoda-Ul'yanov, V. A.

TITLE: Some comments on the determination of the yield of photoneutrons from thick specimens

PERIODICAL: Atomnaya energiya, v. 10, no. 3, 1961, 265-266

TEXT: This "Letter to the Editor" presents a comparison of the results of measurements of the photoneutron yield from thick targets (of some radiation lengths) of various authors, and also a critical discussion of the data obtained. In addition, experimental results are compared with calculations of the present authors. With the exception of some data on the (γ,n) reaction on lead, the experimental results have been taken from Ref. 1 (V. M. Grizhko et al., Zh.eksperim. i teor. fiz., 38, 1370, 1960) and Ref. 2 (W. Barber, W. George, Phys.Rev. 116, 1551, 1959), which deal with the yield of photoneutrons from several elements bombarded with monoenergetic electrons in the range of 10-35 Mev. The measuring techniques used in the two investigations were slightly different; the results obtained for lead targets are shown by curves 1 and 2 of Fig. 1.

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Some comments on the determination ... S/089/61/010/003/012/021
B102/B205

Using data on the (γ,n) excitation functions for lead from Refs. 3 and 4 (Phys.Rev. 91, 659 (1953) and 108, 77 (1957)), the authors calculated the photoneutron yields from infinitely thick targets by means of the Belen'kiy-Tamm equilibrium spectrum. Results are shown by curves 3, 3', and 4 of Fig. 1. Curve 3' lies between 1 and 2 and was obtained on the assumption that the (γ,n) reaction cross section in lead is constant at energies of 22-30 Mev and equal to that obtained for 18-22 Mev. Regarding the pair-production cross section it was supposed that $\sigma_{pair}=\sigma_{B.H.}+4.0+46/\omega$; $\sigma_{B.H.}$ is the pair-production cross section according to Bethe-Heitler; $\omega=E/m_0c^2$; E denotes the electron energy, and m_0c^2 the energy of the electron at rest. A comparison between v on 3' and 1 and 2 leads to the assumption that at energies above 21 Mev, the photoneutron production cross section in lead is bound to increase. Assuming infinitely thick targets layers and using the Belen'kiy-Tamm spectrum, the yields of photoneutrons for copper and uranium were also calculated. Here, the curves diverge much more, and the theoretical curves are steeper

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and higher in both cases. There are 2 figures and 6 references: 2 Soviet-bloc and 4 non-Soviet bloc.

SUBMITTED: August 31, 1960

√

Card 3/3

L 26153-63 EWT(1)/BDS/ES(w)-2 AFFTC/ASD/ESD-3/SSD Pab-4

ACCESSION NR: AR3005149 S/0058/63/000/006/V031/V031

64

SOURCE: RZh. Fizika, Abs. 6 V215

AUTHOR: Mazyukevich, N. P.; Shabalina, L. A.; Shkoda-Ul'yanov, V. A.

TITLE: Critical energies of the elements, calculated by the Belen'kiy-Tamm method

CITED SOURCE: Dokl. i soobshch. Ushgorodsk. un-t, Ser. Fiz.-matem. i istor. n., no. 5, 1962, 30-38

TOPIC TAGS: electron , critical energy, element

TRANSLATION: A table is presented of the critical electron energies for the majority of the elements of the periodic system, and also for water and air. It is noted that the obtained results differ quite noticeably from the data given by Rossi (High-energy Particles, GITTL, Moscow, 1955). The authors attribute this difference to the fact that in their method, unlike in the calculations by Rossi and others, the density effect is taken into account, and averaging is carried out over the equilibrium spectrum. An approximate formula is given for the calculation of the critical energy of the element as a function of Z; this formula

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L 16153-63

ACCESSION NR: AR3005149

differs from the analogous formula given by Belen'kiy and Ivanenko (RZhFiz, 1961, 4B309). V. Mikhaylov.

DATE ACQ: 15Jul63 SUB CODE: PH ENCL: 00

Card 2/2

S/058/62/000/012/011/048
A160/A101

AUTHORS: Parlag, A. M., Sikora, D. I., Shkoda-Ul'yanov, V. A.

TITLE: Faraday's cylinder is an electron-beam monitor and a photoneutron source

PERIODICAL: Referativnyy zhurnal, Fizika, no. 12, 1962, 13, abstract 12B92 (In collection: "Elektron. Uskoriteli", Toms, Tomskiy un-t, 1961, 189 - 191)

TEXT: To investigate the excitation functions of photoneutron reactions, it is proposed to use a single-energy electron beam, and a thick-walled Faraday's cylinder - as a monitor and as a sample for investigation. Presented is the block diagram of the instrument for the rigorous integration of the electron beam captured by Faraday's cylinder. A few corrections are indicated, which have to be considered when measuring photoneutrons.

A. Parlag

[Abstracter's note: Complete translation]

Card 1/1

S/185/62/007/002/003/016
D299/D302

24 6710

AUTHORS: Hryshayev, I.O., Parlah, O.M., Sikora, D.I., Shkoda-Ul'yanov, V.O., and Shramenko, B.I.

TITLE: Determining the principal characteristics of photonuclear reactions of certain chemical elements and their possible use in practice

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 7, no. 2, 1962, 138 - 143

TEXT: The work was reported to the Ukrainian Conference on the Peaceful Uses of Atomic Energy, Kyyiv, March 1961. The determination of the yield and of the cross section of photonuclear reactions as a function of the energy of the incident photons, is important for understanding the interaction mechanism of photons and nuclei. The difficulties encountered in measuring the photoneutron yield and the cross sections are reviewed. These difficulties can be overcome by using thick specimens instead of thin ones, and a monochromatic electron-beam instead of a continuous photon spectrum. In the references, theoretical- and experimental methods were de-

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Determining the principal ...

veloped; thereby the Belenkiy-Tamm equilibrium-spectrum was used for calculating the photoneutron yields for thick absorbers (U, Bi, Pb, Cu, Al and C); the calculations involved use of the excitation functions of γn-reactions for these elements, as known at that time; in the case of Pb, these functions differed from investigator to investigator. In order to ascertain the reasons for this discrepancy, the authors investigated the photoneutron yield in Pb, for electron energies of 10.5 to 20.5 Mev. The experiments were conducted at the linear accelerator of the Physicotechnical Institute of the AS UkrRSR. Similar measurements were also carried out by W.C. Barber and W.D. George in the USA (Ref. 14: Phys. Rev., 116, 1551, 1959). The results of Ref. 14 (Op.cit.) were in agreement with the present work, yet the experimental procedure differed somewhat; it is noted that the use of a spectrum, different from the Belenkiy-Tamm spectrum, did not give satisfactory results in Ref. 14 (Op. cit.). Hence the Belenkiy-Tamm spectrum can be successfully used for calculating the photoneutron yield in the energy range under consideration; such calculations, in conjunction with experimental measurements in thick specimens, can be also used for verifying the

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Determining the principal ...

cross sections measured by means of thin specimens. The experimental determination of the photoneutron yield in thick specimens is also of practical interest. Two possible fields of application are considered: Protection against neutrons in work with accelerators, and in the design of compact powerful γ-ray generators for prospecting of mineral resources on a large scale. As an example, the identification of oil and water strata is considered, based on the different photonuclear properties of the respective isotopes. Further, the experimental photoneutron yields from thick specimens, can be used for determining the integral cross-sections of photoneutron reactions; the Belenkiy-Tamm spectrum permits solving the corresponding integral equation without the use of approximate methods. There are 2 figures, 1 table and 24 references: 15 Soviet-bloc and 9 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: L. Katz, A.G.W. Cameron, Can. J. Phys., 29, 518, 1958; K.L. Brown and G.W. Tautfest, Rev. Sci. Instr., 27, 696, 1956; M. Elaine Toms, E. Stephens, Phys. Rev., 108 77, 1957; W.C. Barber, W.D. George, Phys. Rev., 116, 1551, 1959.

Card 3/4

Determining the principal ...

ASSOCIATION: Uzhhorods'kyy derzhuniversytet (Uzhhorod State University); Fizyko-tekhnichnyy instytut (Physicotechnical Institute), Kharkiv

SUBMITTED: May 4, 1961

Card 4/4

L 17586-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/JG/DM

ACCESSION NR: AP3005223 62 S/0089/63/015/002/0146/0151

AUTHORS: Parlag, A. M.; Suvorov, A. D.; Shkoda-U'lyanov, V. A.; Shabalina, L. A.

TITLE: Computation of photoneutron yield from mixtures of SiO sub 2 with small amounts of beryllium, water, lithium, carbon, uranium and thorium

SOURCE: Atomnaya energiya, v. 15, no. 2, 1963, 146-151

TOPIC TAGS: SiO sub 2, photoneutron yield, photoneutron , beryllium, water, lithium, carbon, uranium, thorium

ABSTRACT: The avalanche theory of Belenkiy and Tamm (see the article by S. Z. Belenkiy and I. P. Ivanenko, Uspekhi fiz. nauk, 19, 1959, 632) is applied for the computations of the yield curves for the photoneutrons from mixtures described in the title. The computation was made for irradiation by both electrons and neutrons. The results are given in 5 tables for mixtures of several elements, and in 2 figures for mixtures of sand with 1% of only one element. The photoneutron method might find an application in the analysis of lithium, uranium, and thorium in ores. Orig. art. has: 2 figures and 5 tables.

ASSOCIATION: none

Card 1/2

DOROSH, M.M.; KOSTYU, Ya.Ye.; SHKODA-UL'YANOV, V.A. [Shkoda-Ul'ianov, V.O.]

Use of the yield of delayed neutrons from a thick water target in determining the reaction cross section $_8O^{18}(\gamma p)_7N^{17}$ beyond the giant resonance region. Ukr. fiz. zhur. 9 no.9:1040-1041 S '64. (MIRA 17:11)

1. Uzhgorodskiy gosudarstvennyy universitet.

DOROSH, M.N.; KOSTYU, Ya.E.; SHKODA-UL'YANOV, V.A.

Highest possible yields of delayed neutrons produced by certain photonuclear reactions. Atom. energ. 17 no.3: 215-217 S '64. (MIRA 17:9)

ACCESSION NR: AP4037562 S/0056/64/046/005/1540/1544

AUTHOR: Dorosh, M. M.; Parlag, A. M.; Shkoda-Ul'yanov, V. A.; Shabalina, L. A.

TITLE: On contradictory results of measurements of the (Gamma, n) reaction cross sections for lead

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1540-1544

TOPIC TAGS: lead, gamma neutron reaction, cascade, gamma quantum, photoneutron

ABSTRACT: In view of the disparity between the experimental yields for heavy and medium-Z elements at low energies and the values calculated by the Belen'kiy-Tamm cascade theory, an experiment was set up to measure the cross sections of the (γ, n) reaction on lead, induced by bremsstrahlung, since the published data for the cross section of some elements, including lead, are contradictory. The mea-

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ACCESSION NR: AP4037562

surements were made with a 25-MeV betatron with a tungsten target. The neutrons were registered with a setup analogous to that described by Gavrilov and Lazareva (ZhETF v. 30, 855, 1956). The cross section obtained in the maximum was 0.65 b, coinciding with the value obtained by means of monochromatic γ quanta. A comparison of the calculations of the photoneutron yield with the aid of the obtained cross section and with the experimental data of Grizhko et al. (ZhETF, v. 38, 1370, 1960) confirms the discrepancy between theory and experiment. It is therefore suggested that the Belen'kiy-Tamm spectrum is not accurate in the energy region in question, greatly distorting the (γ, n)-reaction cross section both in form and in absolute magnitude. The reasons for the observed discrepancies are now under investigation. Orig. art. has: 2 figures.

ASSOCIATION: Uzhgorodskiy gosudarstvenny*y universitet (Uzhgorod State University)

Card 2/5

ACCESSION NR: AP4037562

SUBMITTED: 20Jul63	DATE ACQ: 09Jun64	ENCL: 02
SUB CODE: NP	NR REF SOV: 007	OTHER: 006

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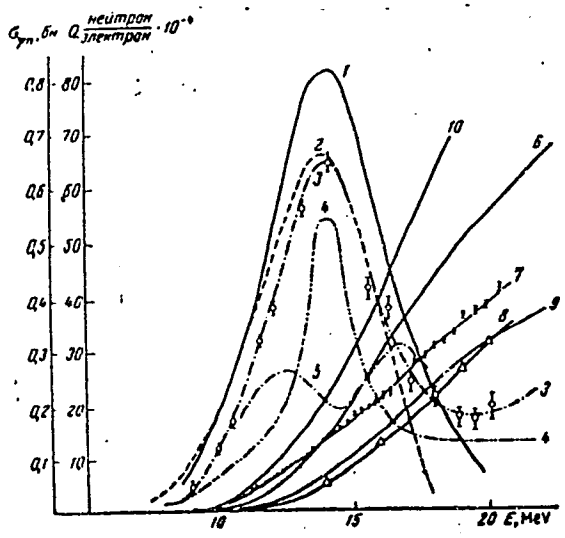
ACCESSION NR: AP4037562

ENCLOSURE: 01



Cross section of (γ,n) reaction on lead and photoneutron yield from an infinitely thick sample of lead, induced by electrons. The left ordinates are the (γ,n) reaction cross sections inbarns, and the right ordinates are the absolute neutron yields in neutron/electron units; curve 2 represents the (γ,n) cross section on lead, obtained in the present work and calculated from the yield curve of encl. 02

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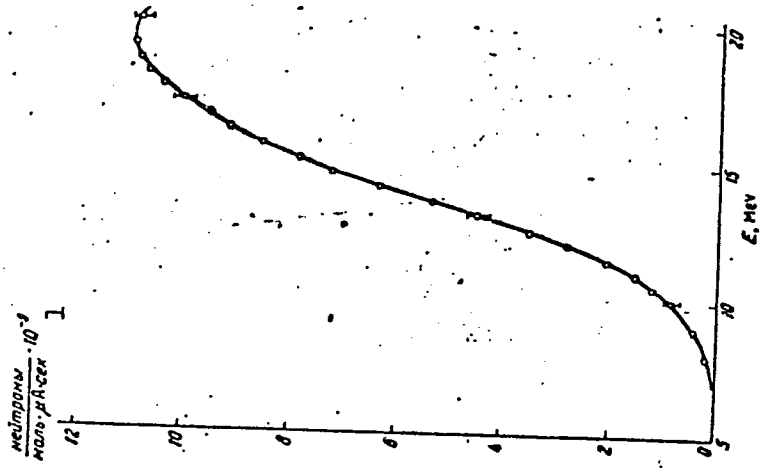
ACCESSION NR: AP4037562

ENCLOSURE: 02



Yield curve for photoneutrons from lead, induced by bremsstrahlung
1 - neutrons/mole-μA-sec

Card 5/5

L 26920-65 EWT(m) DIAAP DM
ACCESSION NR: AP5004001 S/0089/65/018/001/0028/0033

AUTHORS: Grishayev, I. A.; Sikora, D. I.; Shkoda-Ul'yanov, V. A.; Shramenko, B. I.

TITLE: Measurement of the photoneutron yield from copper and water targets of large thickness, and determination of the excitation functions of the (Gamma, n) reactions for O^{16} and Cu^{63} with the aid of the Belen'kiy-Tamm equilibrium photon spectrum

SOURCE: Atomnaya energiya, v. 18, no. 1, 1965, 28-33

TOPIC TAGS: photoneutron yield, excitation function, gamma neutron reaction, neutron reaction, photon spectrum, oxygen, copper

ABSTRACT: The photoneutron yield from samples of copper and water of practically infinite thickness, induced by electrons with energies up to 66 MeV, were measured with a secondary-emission monitor consisting of two stacks of aluminum foils of equal thickness (2.7

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mg/cm^2), each containing 10 foils 40 mm in diameter. The purpose of the experiment was to compare the resultant yield, obtained with a target thick enough to absorb completely the photons that are active in the (γ, n) reaction with the photoneutron yield calculated by the cascade theory using the known cross section of the (γ, n) reaction in the investigated nucleus. Conversely, from the experimental value of the photoneutron yield it is possible to calculate the cross section of the (γ, n) reaction and compare it to the values obtained by other methods where the results of the cascade theory are not employed. The monoenergetic bombarding electrons were obtained from the linear accelerator of the Fiziko-tekhnicheskiy institut (Physicotechnical Institute) AN UkrSSR. The data obtained, using electron energies up to 66 MeV, on photoneutrons produced in water by the (γ, n) reaction in O^{16}, show that the use of the equilibrium spectrum of photons is justified in the case of light elements. On the basis of these data and of the Belen'kiy-Tamm theory as developed in earlier papers by one of the authors (Shkoda-Ul'yanov, Collection:

"Nekotoryye problemy sovremennoy fiziki yadra i elementarnykh chastits [Some Problems of Modern Physics of the Nucleus and of Elementary Particles], L'vov, State University Press, 1957, p. 89 and p. 55), are used to calculate the excitation functions of (γ, n) reactions for O^{16} and Cu^{63}. Results are compared with data by other authors, obtained with thin samples irradiated by bremsstrahlung gamma quanta, and are found to agree with the latter. It is noted in conclusion that in addition, the excitation functions of (γ, n) reactions in Cu^{63}, obtained by various methods from data on the photoneutron yield from thick samples in the giant-resonance region, are in reasonable accordance with each other. "The authors thank all the co-workers of the Fiziko-tekhnicheskiy institut (Physico-technical Institute) AN UkrSSR and the Department of Nuclear Physics of the Uzhgorod State University, who participated in the preparation, setup, and discussion of the experiments described, and also in the calculations, especially to A. K. Val'ter, V. I. Gol'danskiy, A. A. Krasnikov, V. V. Petrenko, G. L. Fursova, I. K. Nad', L. A.

L 26920-65
ACCESSION NR: AP5004001

7

Shabalin, A. E. Kost', A. M. Parlaga, N. P. Mazyukevich, M. P. Lorikyan, P. A. Medvedkov, and V. I. Startsev." Orig. art. has: 8 figures.

ASSOCIATION: None

SUBMITTED: 18Nov63 ENCL: 00 SUB CODE: NP

NR REF SOV: 004 OTHER: 013

Card 4/4

L 4525-66 EWT(m)/FCC/T IJP(c)

ACC NR: AP5024639 SOURCE CODE: UR/0048/65/029/009/1708/1708

45
39
23

AUTHOR: Sikora, D.I.; Shkoda-Ul'yanov, V.A.

ORG: none

TITLE: Concerning the accuracy of the equilibrium photon spectrum at energies close to the energy of the primary electron /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1706-1708

TOPIC TAGS: electron, photon, cascade, spectral energy distribution, photonuclear reaction, neutron, mathematic method, integral equation, Volterra equation

ABSTRACT: The authors have employed the method of successive generations to calculate the equilibrium energy distribution of photons in electron-photon showers initiated in lead, copper, and water by 24 MeV electrons and have compared the results with available experimental data on the yield of photoneutrons in the bombardment of thick targets with electrons. The calculations were undertaken because there are discrepancies in the published data, and the method was selected because it is capable of giving accurate results at photon energies close to the primary electron energy. Approximate agreement was obtained for energies near the primary electron energy only for materials with low atomic number. It is suggested that the discrepancy may be due to inaccurate values of the critical energies for photodisintegration. A possible inaccuracy

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L 4525-66

ACC NR: AP5024639

in the calculations is still being investigated. It is pointed out that the method of V.I.Krylov (Tr. Matemat. in-ta im. V.A.Steklova, 28, 33, 1949) for solving Volterra integral equations, although it is very cumbersome, can be handled with computers and has the advantage that the accuracy can be continually improved without decreasing the integration step. In conclusion, the authors express their gratitude to A.K.Val'ter (deceased), I.P.Ivanenko, I.A.Grishayev, B.I.Shramenko, A.M.Parlag, and L.A.Shabalina for valuable discussions and assistance with the work. Orig. art. has: 5 formulas and 3 figures.

SUB CODE: NP/ SUBM DATE: 00/ ORIG REF: 008/ OTH REF: 006

Card 2/2

ACC NR: AP6032400 SOURCE CODE: UR/0089/66/021/003/0163/0166

AUTHOR: Dorosh, M. M.; Mazyukevich, N. P.; Shkoda-Ul'yanov, V. A.

ORG: none

TITLE: On the feasibility of an analysis of certain metals for oxygen by recording delayed neutrons produced in the reaction $O^{18}(\gamma, p)N^{17}$

SOURCE: Atomnaya energiya, v. 21, no. 3, 1966, 163-166

TOPIC TAGS: metal analysis, oxygen, photoneutron, particle accelerator, neutron detection

ABSTRACT: The authors point out, first, that photoneutron methods offer certain advantages over chemical analysis or radioactive-tracer techniques, since chemical analysis is not sensitive enough and radioactive procedures call for expensive and cumbersome reactor installations. The recent availability of strong-current accelerators, producing electron beams of 10 -- 100 microamperes and stronger and having small dimensions, or γ quanta with appreciable energy, can be used to irradiate samples containing oxygen. If the sample size is large enough, an electron-photon cascade is produced in it and the resultant radioactive N^{17}, with a half life of 4.15 sec, decays to produce the stable isotope O^{16} and a neutron. These delayed neutrons, which equal the number of O^{18} nuclei in the sample, can be counted to determine the oxygen

UDC: 543.53

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ACC NR: AP6032400

content. The authors present sample calculations for a hypothetical accelerator with 100 microampere current and show that if the measurement time is of the order of 1.5 minutes and the electron energy is ~ 25 MeV, the method permits measurement of oxygen contents of 10^{-4}%. The contents in thick blocks of Be, Ti, and Zr. It is concluded that with strong-current accelerators and at medium energies, metals and alloys could be analyzed on a conveyor-belt basis. Orig. art. has: 1 figure, 2 formulas, and 1 table.

SUB CODE: 11,20,18/ SUBM DATE: 24Apr64/ ORIG REF: 014/ OTH REF: 002

Card 2/2

CHEREDNIKOV, A.V.; MINYAYEV, I.I.; SHKODAKOV, M.N.

Three-spindle borer. Der. prom. 8 no.9:27 S '59. (MIRA 12:12)

(Drilling and boring machinery)

SHKODENKO, V.F., starshiy elektromekhanik

Suggestions of efficiency experts. Avtom. telem. i sviaz' 3 no.11: 26 N '59 (MIRA 13:3)

1. Kontrol'no-izmeritel'naya gruppa Debal'tsevskoy distantsii signalizatsii i svyazi Donetskoy dorogi.
(Electric relays)

SALUNSKAYA, N.I.; SHKODENKO, V.I.; ROGACHEV, V.L.; STETSENKO, V.A.; AFONINA, A.P.

Spraying against corn smut. Zashch. rast. ot vred. i bol. 6 no.5:22-23 My '61. (MIRA 15:6)

(Corn (Maize)—Diseases and pests)
(Smuts) (Fungicides)

SALUNSKAYA, N.I.; SHKODENKO, V.I.; ROGACHEV, V.L.; KONASHEVICH, V.A.

Chemical control of common corn smut. Zashch. rast. ot vred. i bol. 8 no.4:21-22 Ap '63. (MIRA 16:10)

1. Ukrainskiy nauchno-issledovatel'skiy institut zashchity rasteniy, Poltavskaya i Zaporozhskaya sel'skokhozyaystvennaya stantsiya i Gosudarstvennyy nauchno-issledovatel'skiy institut Grazhdanskogo vozdushnogo flota.
(Ukraine--Corn (Maize)--Diseases and pests)
(Smuts)

SALUNSKAYA, N.I., kand.biolog.nauk; SHKODENKO, V.I.; STETSENKO, V.A.

Corn smut. Zashch. rast. ot vred. i bol. 7 no.8:36-37 Ag '62. (MIRA 15:12)

1. Ukrainskiy institut zashchity rasteniy i Poltavskaya i Zhitomirskaya gosudarstvennyye opytnyye stantsii.
(Smuts) (Corn (Maize)—Diseases and pests).

PROSTAKISHIN, G.P.; SHKODICH, P.Ye.

Refractometric method of determining the dried defatted residue of milk. Vop.pit. 22 no.1:57-59 Ja-F '63 (MIRA 16:11)

1. Iz kafedry gigiyeny pitaniya (zav. - prof. M.P. Bolotov) Irkutskogo gosudarstvennogo meditsinskogo instituta.

*

SHKODIN, A. G.

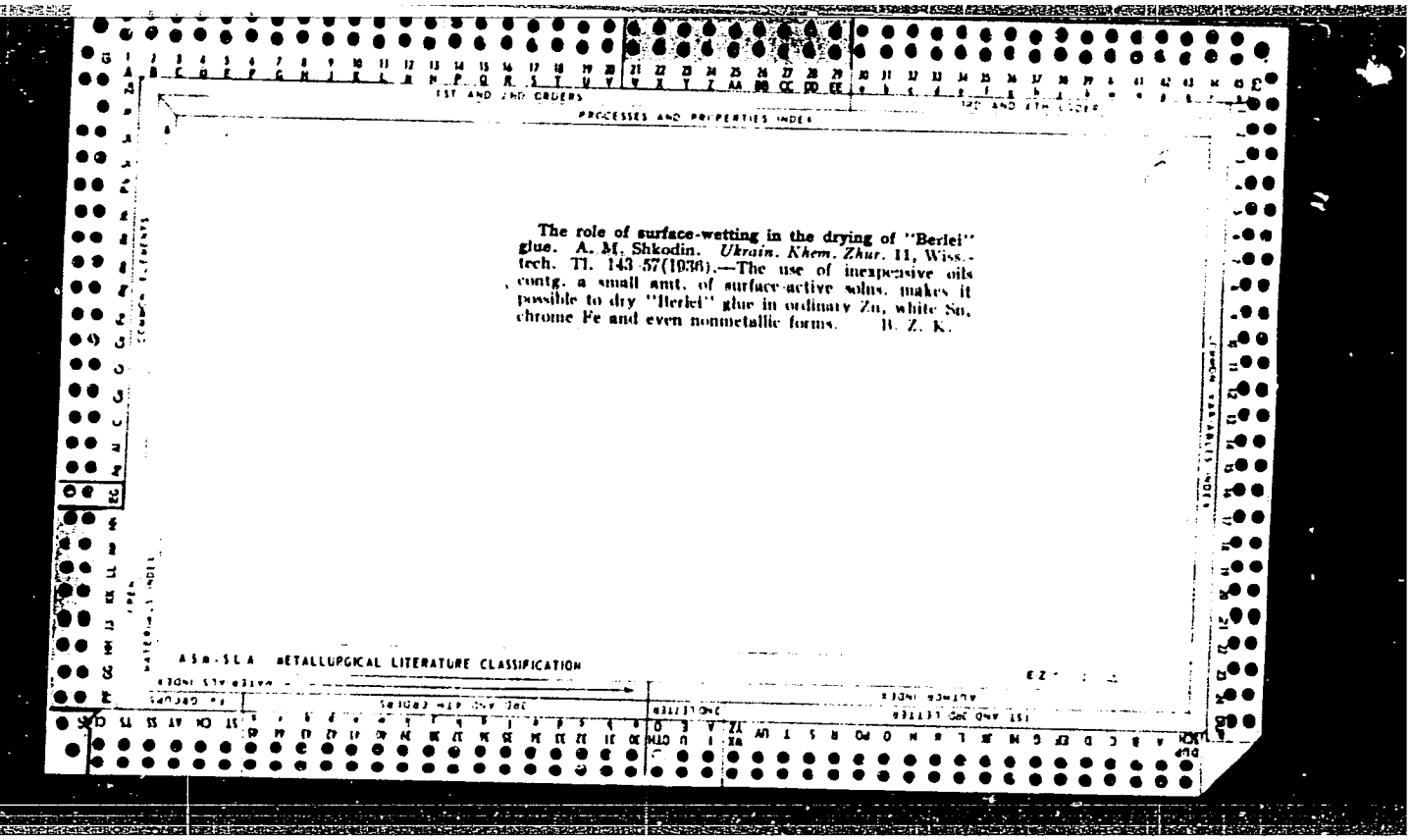
Opyt mekhanizatsii ucheta i vychislitel'nykh rabot v torgovykh predpriiatiiakh /Experience in using machines for accounts and computations in commercial enterprises/. Gosstatizdat, 1953. 94 p.

SO: Monthly List of Russian Accessions, Vol. 7 No. 1 April 1954.

SHKODIN, A.I., inzhener.

Some data on the operating conditions of electric transmission and communication lines in regions of prevailing frost. Elektrichestvo no.10:14-19 O '53. (MLRA 6:10)

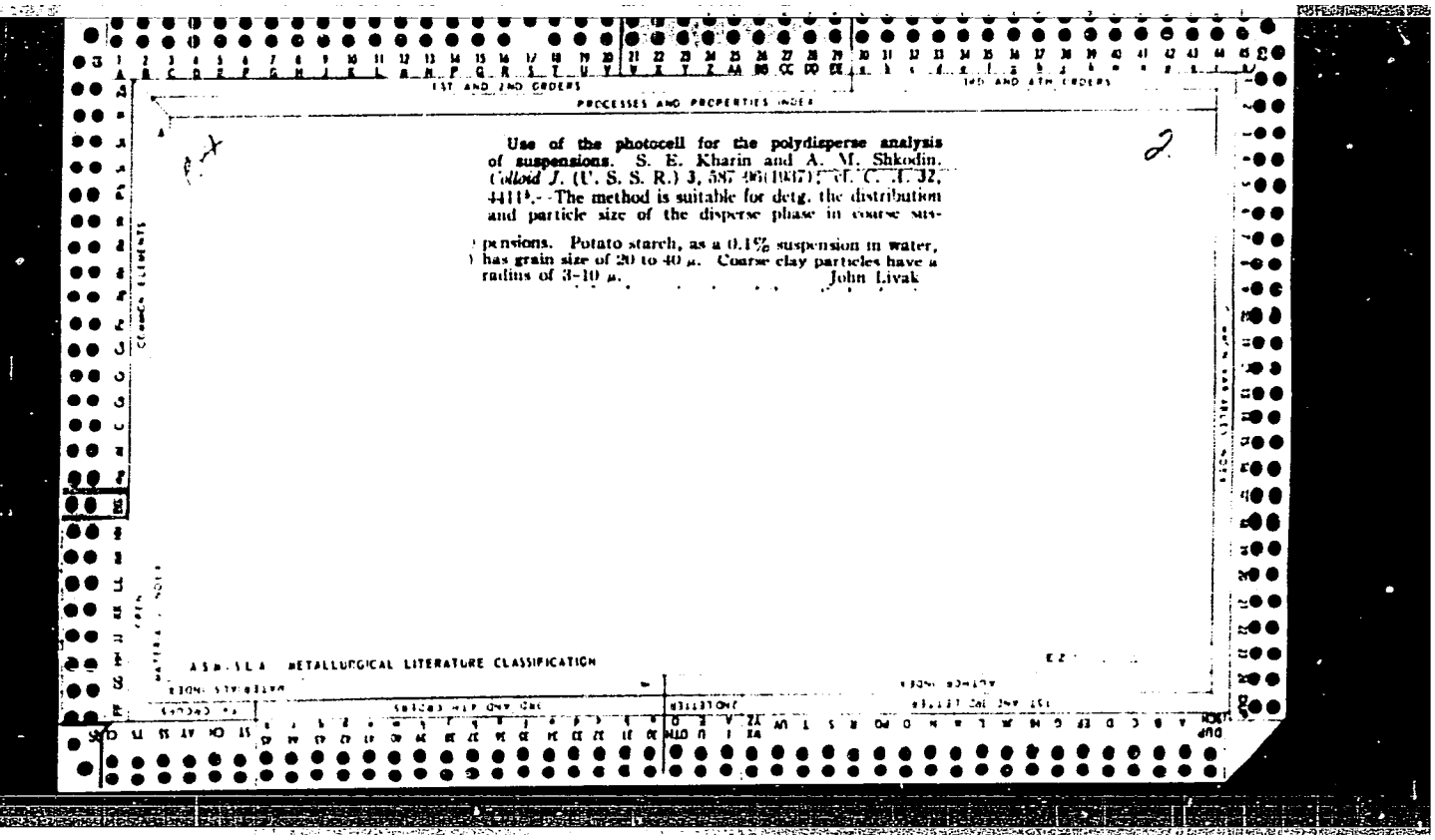
1. Novo-Pyatigorskaya dorozhnaya geofizicheskaya stantsiya.
(Electric lines--Cold weather operation)



PROCESSES AND PROPERTIES INDEX

The role of surface-wetting in the drying of "Berlei" glue. A. M. Shkodin. *Ukrain. Khem. Zhur.* 11, Wiss.-tech. Tl. 143-57(1936).—The use of inexpensive oils contg. a small amt. of surface-active solns. makes it possible to dry "Berlei" glue in ordinary Zn, white Sn, chrome Fe and even nonmetallic forms. B. Z. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

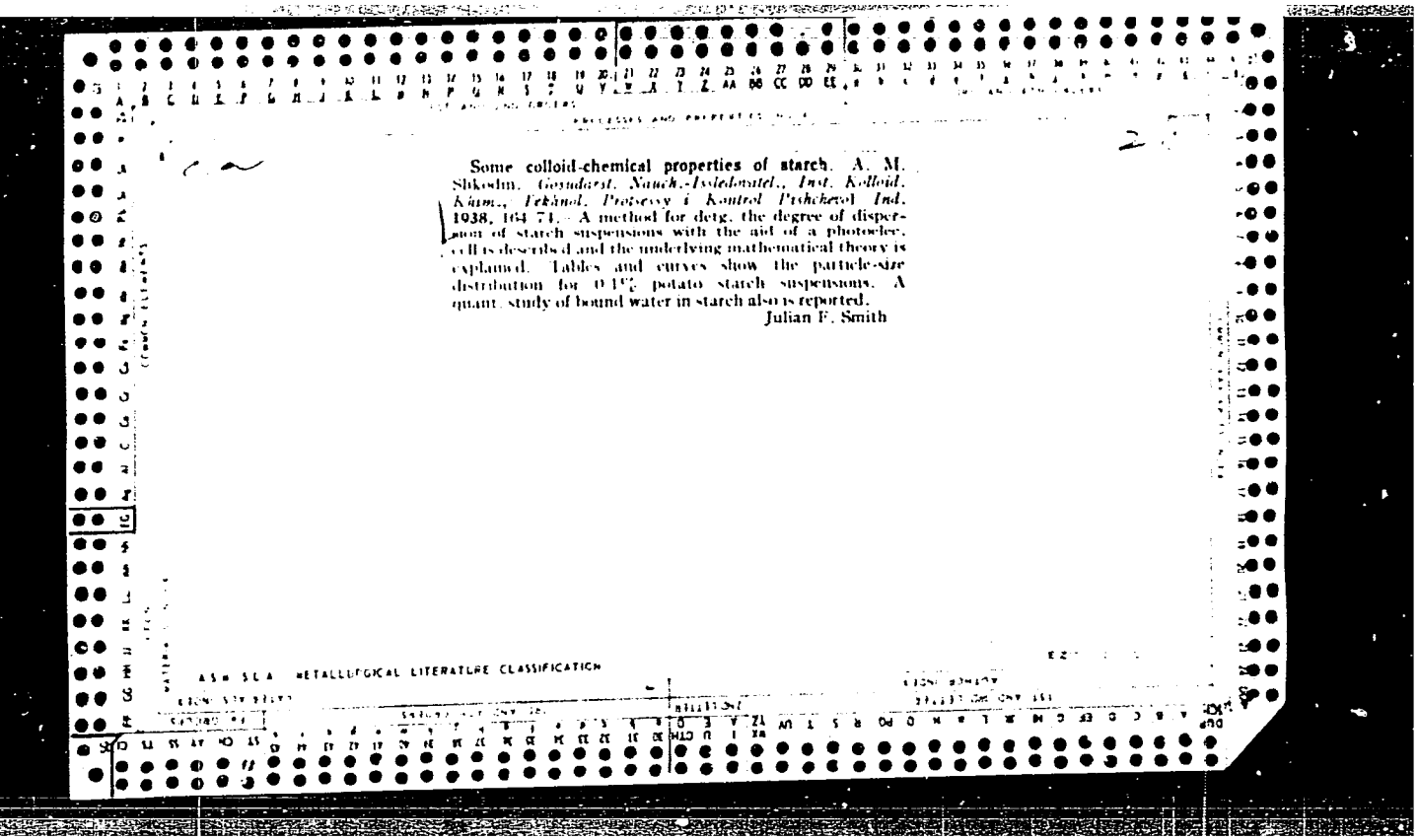


PROCESSES AND PROPERTIES INDEX

Use of the photocell for the polydisperse analysis of suspensions. S. E. Kharin and A. M. Shkodin. *Colloid J.* (U. S. S. R.) 3, 587-96(1937); cf. C. A. 32, 4411⁹.—The method is suitable for detg. the distribution and particle size of the disperse phase in coarse sus-

pensions. Potato starch, as a 0.1% suspension in water, has grain size of 20 to 40 μ. Coarse clay particles have a radius of 3–10 μ. John Livak

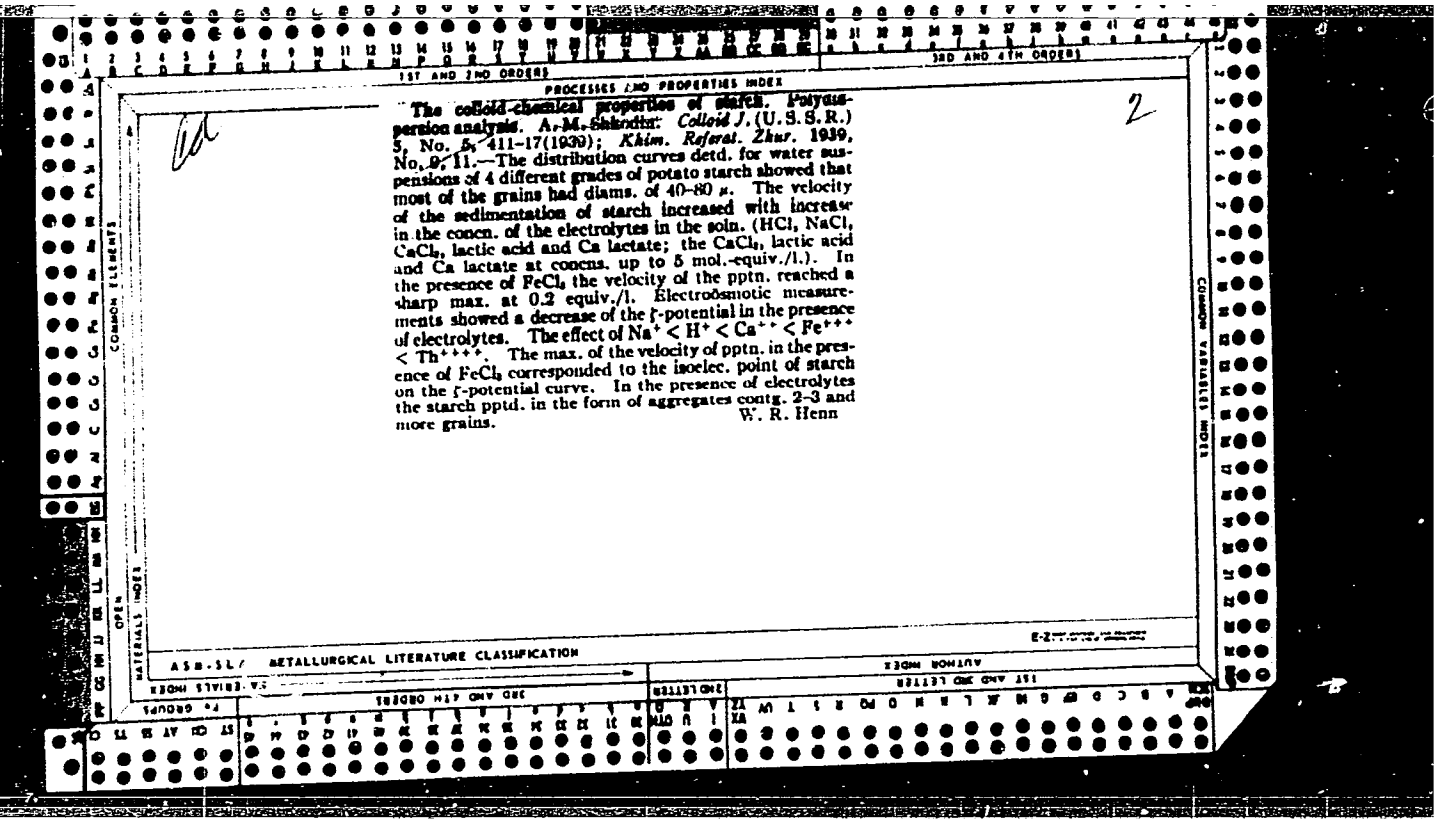
A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION



Some colloid-chemical properties of starch. A. M. Shkodin. *Geyudarst. Nauch.-Issledovatel., Inst. Kolloid. Khim., Tekhnol. Protsessy i Kontrol Pishchevol Ind.* 1938, 164-71. - A method for detg. the degree of dispersion of starch suspensions with the aid of a photoelec. cell is described and the underlying mathematical theory is explained. Tables and curves show the particle-size distribution for 0.1% potato starch suspensions. A quant. study of bound water in starch also is reported.

Julian F. Smith

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

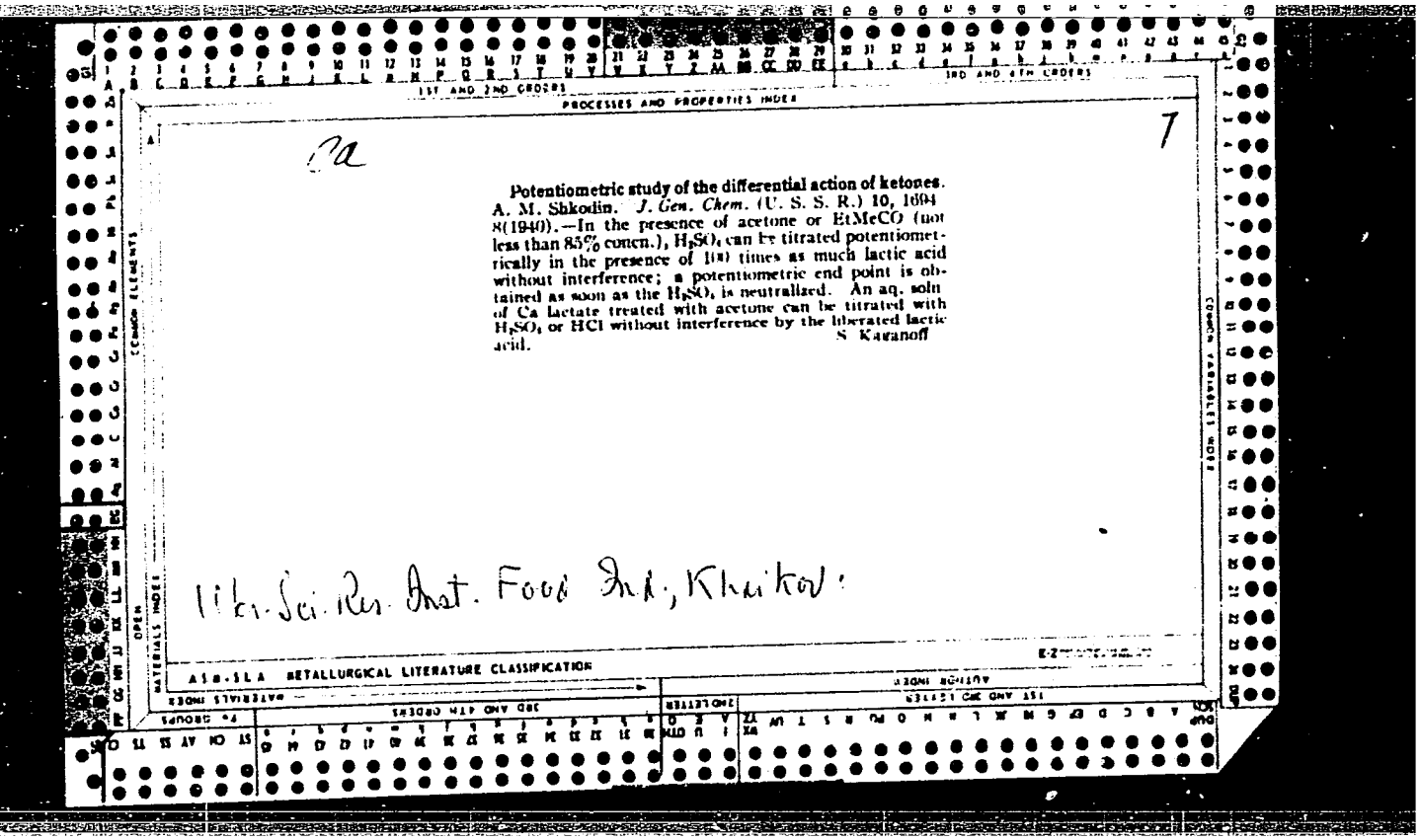
1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

The colloid-chemical properties of starch. Polydispersion analysis. A. M. Shkodin. *Colloid J.* (U.S.S.R.) 5, No. 5, 411–17(1939); *Khim. Referat. Zhur.* 1939, No. 9, 11.—The distribution curves detd. for water suspensions of 4 different grades of potato starch showed that most of the grains had diams. of 40–80 μ. The velocity of the sedimentation of starch increased with increase in the concn. of the electrolytes in the soln. (HCl, NaCl, $CaCl_2$, lactic acid and Ca lactate; the $CaCl_2$, lactic acid and Ca lactate at concns. up to 5 mol.-equiv./l.). In the presence of $FeCl_3$ the velocity of the pptn. reached a sharp max. at 0.2 equiv./l. Electroösmotic measurements showed a decrease of the ζ-potential in the presence of electrolytes. The effect of $Na^+ < H^+ < Ca^{++} < Fe^{+++} < Th^{++++}$. The max. of the velocity of pptn. in the presence of $FeCl_3$ corresponded to the isoelec. point of starch on the ζ-potential curve. In the presence of electrolytes the starch pptd. in the form of aggregates contg. 2–3 and more grains.

W. R. Henn

ASB-SL/ METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

7a

Potentiometric study of the differential action of ketones. A. M. Shkodin. *J. Gen. Chem.* (U. S. S. R.) 10, 1684-8(1940).—In the presence of acetone or EtMeCO (not less than 85% concn.), H_2SO_4 can be titrated potentiometrically in the presence of 100 times as much lactic acid without interference; a potentiometric end point is obtained as soon as the H_2SO_4 is neutralized. An aq. soln of Ca lactate treated with acetone can be titrated with H_2SO_4 or HCl without interference by the liberated lactic acid.
S. Kaganoff

Ukr. Sci. Res. Inst. Food Ind., Kharkov.

A1a-51A METALLURGICAL LITERATURE CLASSIFICATION

CA

Differentiating effect of solvents on the strength of acids. V. Potentiometric separation of mixtures of acids in anhydrous acetic acid. A. M. Shkodin and N. A. Izmailov (Kharkov State Univ.). *Zhur. Obshchel Khim.* 20, 38-44(1950); *J. Gen. Chem. U.S.S.R.* 20, 39-45 (1950)(Engl. translation); cf. *C.A.* 32, 2051[4]; 33, 7648[8]; 35, 3103[9]; 36, 3119[9].—$HClO_4$, HCl, H_2SO_4, $MeC_6H_4SO_3H$, and HNO_3 in 0.01 *N* soln. in anhyd. AcOH contg. some Ac_2O to bind the H_2O, were titrated potentiometrically with C_5H_5N and $PhNMe_2$ (strong bases in AcOH), with a quinhydrone electrode in the case of 1st 4 acids, a chloranil electrode with HNO_3. The pairs $HClO_4$ + H_2SO_4, $HClO_4$ + HCl, and $MeC_6H_4SO_3H$ + HNO_3 can be readily sepd. by potentiometric titration in AcOH, whereas no such sepn. is possible in solns. in H_2O, EtOH, and even in Me_2CO. CCl_3CO_2H cannot be titrated in AcOH, but it can be sepd. in mixts. with inorg. acids by way of duplicate titration, one in H_2O to det. the total acidity, and another in AcOH to det. the inorg. acid alone. The strength of the acids in AcOH evidently decreases in the order $HClO_4 \gg MeC_6H_4SO_3H > H_2SO_4 > HCl > HNO_3$; from the potential jumps near the equivalence points, $HClO_4$ is 10^4 times as strong as H_2SO_4 and 10^6 times as strong as HCl. Detns. of the elec. cond. gave the following values of pK: $HClO_4$ 6.80, HBr 8.40, H_2SO_4 8.20, HCl 8.85, HNO_3 9.38, CCl_3CO_2H 11.40. In solns. in AcOH, the strength of the acids is decreased, and the differences accented, whereas liquid NH_3 increases the strength of the weak acids and tends to level the differences. This different behavior of the 2 solvents is detd. by the proton-donor nature of AcOH and the acceptor nature of NH_3.

N. Thon

CA

2.

Effect of anhydrous formic acid on the strength of bases. A. M. Shkodin, N. A. Izmailov, and N. P. Dzyuba (Kharkov State Univ.). *Zhur. Obshchei Khim.* (*J. Gen. Chem.*) 20, 1999-2003(1950).—Samples of pure bases were titrated with 0.2 *M* *p*-$MeC_6H_4SO_3H$ in dry HCO_2H soln. (0.1 *M* solns. were preferred). The dissocn. consts. of bases in HCO_2H become levelled, with weak bases increasing their strength by tremendous amts.; this makes it possible to titrate such weak bases as theobromine or caffeine with an accuracy of better than 1%. The pH scale in HCO_2H lies lower than in aq. solns. and the point of neutrality is reached at pH 3; this makes it impossible to titrate dil. solns. with accuracy, since the potential jump is small. With a quinhydrone-satd. HgCl electrode pair, the following values of pK were obtained for the various bases: HCOONa 2.38, pyridine 2.38, benzidine 2.30, $PhNH_2$ 2.42, 2-$C_9H_7NH_2$ 2.38, 1-$C_9H_7NH_2$ 2.28, glycine 2.38, caffeine 2.38, theobromine 2.30.

G. M. Kosolapoff

1951

Effect of anhydrous formic acid on the strength of bases. A. M. Shkodin, N. A. Izmailov, and N. P. Dzyuba (Kharkov State Univ.). *J. Gen. Chem. U.S.S.R.* 20, 2071–4 (1950) (Engl. translation).—See *C.A.* 45, 3225a. H. L. D.

SHKODIN, A. M.

Sep/Oct 51

USSR/Chemistry - Analysis

"Properties of Acids and Bases in Acidic Solvents. III. Titration of Weak Bases in Nonaqueous Formic Acid," A. M. Shkodin, N. A. Izmaylov, N. P. Dayuba, Khar'kov State U imeni A. M. Gor'kiy

"Zhur Analit Khim" Vol VI, No 5, pp 273-275

Examn of effect of nonaq formic acid on strength of strong and weak bases showed that strength of weak bases in the acid increases so much that they can be titrated as strong bases with sufficient accuracy for analysis. Calcd dissocn consts of number of bases (including diethylamine, morphine, pyridine, aniline).

CA

Foaming in mixtures of surface-active colloids. I. The mechanism of foam suppression in soap-saponin mixtures. A. M. Shkodin and G. P. Tikhomirova (Ukrain. Sci. Research Inst. Food Ind., Kharkov). *Kolloid. Zhur.* 13, 134-41(1951).—Mixts. of Na oleate (I) and saponin (II) do not foam, because II is an acid; it converts I into acid soap or free oleic acid which displace I and II from the surface. Moreover I and II are poor frothers. This explanation is proved by: (*a*) potentiometric titration in the presence of a glass electrode; II lowered pH of I solns. and the (unsharp) neutralization point was observed on adding 0.65 g. II to one g. I; (*b*) addn. of 0.2 g. tannin to 1 g. I in 1 l. H_2O reduces the foam vol. from 200 cc. to zero, and addn. of 1 g. lowers pH from 8.6 to 6.5; (*c*) solns. of II in NaOH having pH 8.4 (their prepn. lasts several days because II is neutralized very slowly) have no effect on the foam vol. of I solns.; and (*d*) the length of film that can be withdrawn from I soln. (cf. Smirnova and Rebinder, *C.A.* 41, 1625g) increases linearly with pH between 6.2 and 8.2, and the slopes of the straight lines are identical whether pH is varied by adding II or HCl. The length of film is greater in the presence of HCl because these films do not burst when pricked with a needle, whereas films of I and II do. The foam vol. *V* and the time of collapse *t* of II foams are independent of pH (in the absence of other surface-active substances) between 6.2 and 8.1, but at pH 9.6 *t*, and at pH 11.3 both *V* and *t*, are smaller. Na abietate also can be titrated with II, but does not kill its foam, since abietic acid is not an antifrother. The pH of castor oil soap is not affected by saponin. J. J. Bikerman

SHKODIN, A. M.

Chemical Abst.
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General and Physical Chemistry

The importance of [illegible] A. M. Shkodin. *Colloid J.* (U.S.S.R.) 14, 237-8(1952)(Engl. translation).—See *C.A.* 46, 8402*h*.
H. L. H.

SHKODIN, A. M.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

Foam formation in mixtures of surface-active colloids. II. Foam formation in mixtures of different soaps. A. M. Shkodin and G. F. Tikhomirova. *Colloid J.* (U.S.S.R.) 14, 307-10(1952)(Engl. translation).—See *C.A.* 46, 9379h. H. L. H.

9-2-54

SHKODIN, A. M.

Frothing in mixtures of metal hydroxides and electrolyte sols. I. Effect of electrolytes on the frothing of aluminum hydroxide sol. A. M. Shkodin and L. D. Shaposhnikova. *Uchenye Zapiski Khar'kov. Univ.* 47, *Trudy Nauch.-Issledovatel. Inst. Khim.* No. 10, 101–11(1953); *Referat. Zhur., Khim.* 1954, No. 37519.—The $Al(OH)_3$ sols studied had a concn. of 0.202 and 0.875 g./l. calcd. as Al_2O_3. The frothing ability was judged by the height of the froth layer and by the time required for its complete destruction. Neither the electrolytes nor the $Al(OH)_3$ sols frothed by themselves, but their mixt. did. The relative frothing abilities of the tested electrolytes did not differ greatly, the max. difference being 9-fold. The stabilities differed widely, depending on the nature of the cation and the anion, from 3 sec. to more than 20 days. Acetate, benzoate, and salicylate increased the mech. strength of the froth. Addn. of Na salts of these acids did not change the surface tension of the sols. Cd^{++}, Pb^{++}, and Cu^{++}, particularly when combined with org. acids, increased the stability of the froth materially; for acetates the following series was obtained in this respect: $Na < Mg < Ca \ll Co < Cd < Zn \ll Pb < Cu$; and for the chlorides $K < Na < Ba < Mg < Cu < Co$. The relation between froth formation and froth stability from the concn. of the electrolyte could be expressed by a curve having a max. This is attributed to coagulation of the $Al(OH)_3$ sol leading to the formation of spatial cellular structure that promotes frothing and in the presence of an excess of electrolyte forms compact particles. By use of talc particles sprinkled on the surface of the sol the effect of the electrolyte on the formation of a surface film at the air/sol boundary was studied. On 0.875-g./l. sol the film formed within 3 days. Addn. of mineral salt did not hasten its formation even at large concns.

at which coagulation took place. Rapid acceleration was observed when Cu, Pb, Zn, Co, or Cd acetates were added; e.g. addn. of 5 ml. H_2O and 5 ml. 0.4 *N* $Cu(OAc)_2$ to 5 ml. of the sol induced film formation in 9 sec. The thickness of the film formed in the presence of $Cu(OAc)_2$ was measured by the interference colors and found to be 13 Å. It is suggested that thinner reticular films are formed instantaneously, and this is the cause of frothing. The stability of the films was detd. with the Smirnova and Rebinder app. (*C.A.* 41, 1525g) from the time (t) of the existence of a film 3 cm. long, the film being formed between Pt wires at const. rate of efflux of the soln. The time t varied from 1 sec. for a sol contg. KCl to 25 hrs. for a sol contg. $Cu(OAc)_2$. The values obtained agree qualitatively with the data on froth stability. The formation in $Al(OH)_3$ sol-electrolyte systems of a froth which is as stable as a froth induced by surface-active frothing agents is attributed to the formation of supermicellar spatial structures formed only on the addn. of coagulating electrolytes capable of forming complexes with stabilizing ions. At the boundary solu./air these structures form a 2-dimensional gel that stabilizes the froth.

M. Yoseli